

Access DB# 196864

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DAWN GARRETT Examiner #: 76107 Date: 7/28/2006  
Art Unit: 1774 Phone Number ~~20~~ 2-1523 Serial Number: 10/786,372  
Mail Box and Bldg/Room Location: \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK E-MAIL  
REM 10079

If more than one search is submitted, please prioritize searches in order of need.  
\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ELECTROLUMINESCENT DEVICES HAVING  
CONJUGATED ARYLAMINE POLYMERS  
Inventors (please provide full names): (See Bib Data Sheet)  
Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the claim 1  
formula  
where  
AR  
AR1  
AR2  
AR3  
AR4  
and  
X  
are all phenyl groups

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Cntr.  
JUL 26 2006  
Pat. & T.M. Office

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher: <u>urh</u>	NA Sequence (#) _____	STN <u>634-45</u>	
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____	
Searcher Location: _____	Structure (#) <u>2</u>	Questel/Orbit _____	
Date Searcher Picked Up: <u>8/2/06</u>	Bibliographic _____	Dr. Link _____	
Date Completed: <u>8/2/06</u>	Litigation _____	Lexis/Nexis _____	
Searcher Prep & Review Time: <u>60</u>	Fulltext _____	Sequence Systems _____	
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____	
Online Time: <u>120</u>	Other _____	Other (specify) _____	



# ***STIC Search Report***

***EIC 1700***

**STIC Database Tracking Number: 196864**

**TO: Dawn Garrett**  
**Location: REM 10C79**  
**Art Unit : 1774**  
**August 2, 2006**

**Case Serial Number: 10/786372**

**From: Usha Shrestha**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-3519**  
**usha.shrestha@uspto.gov**

## **Search Notes**

**UNITED STATES DEPARTMENT OF COMMERCE**  
**United States Patent and Trademark Office**  
**Address: COMMISSIONER FOR PATENTS**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**[www.uspto.gov](http://www.uspto.gov)**



CONFIRMATION NO. 3400

<http://www.9000/Drox-Servislet/Drox-Action?serviceName=RibDataSheet&Action=display&brow> 7/28/06

=> fil reg

FILE 'REGISTRY' ENTERED AT 09:30:14 ON 02 AUG 2006

=> d his ful

FILE 'HCAPLUS' ENTERED AT 07:56:44 ON 02 AUG 2006

L1 1 SEA ABB=ON US20050186444/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 07:56:56 ON 02 AUG 2006

L2 14 SEA ABB=ON (10035-10-6/BI OR 122-39-4/BI OR 18643-86-2  
/BI OR 38257-52-2/BI OR 5372-81-6/BI OR 566155-74-6/BI  
OR 62-53-3/BI OR 624-38-4/BI OR 863127-68-8/BI OR  
863127-69-9/BI OR 863127-70-2/BI OR 863127-71-3/BI OR  
863127-72-4/BI OR 863309-01-7/BI)

L3 STR

L4 SCR 1843

L5 0 SEA SSS SAM L3 AND L4

L6 SCR 2043

L7 0 SEA SSS SAM L3 AND L4 AND L6

L8 STR L3

L9 4 SEA SSS SAM L8 AND L4 AND L6

L10 4 SEA SSS SAM L8 AND L6

L11 SCR 1610

L12 17 SEA SSS SAM L8 AND L11

L13 0 SEA SSS SAM L3 AND L11

L14 STR L3

L15 13 SEA SSS SAM L14 AND L4 AND L11

L16 686 SEA SSS FUL L14 AND L4 AND L11

SAV L16 TEMP GAR372/A

L17 10 SEA SUB=L16 SSS SAM L3

L18 283 SEA SUB=L16 SSS FUL L3

SAV L18 TEMP GAR372A/A

FILE 'HCAPLUS' ENTERED AT 09:03:04 ON 02 AUG 2006

L19 229 SEA ABB=ON L18

L20 51 SEA ABB=ON L19(L) PREP/RL

L21 QUE ABB=ON LUM!N? OR ELECTROLUM!N OR ORGANOLUM!N? OR  
(ELECTRO OR ORGANO OR ORG#) (2A) LUM!N? OR LIGHT? (2A) (EMI  
T? OR EMISSION?) OR EL OR E(W) L OR L(W) E(W) D OR OLED

L22 31 SEA ABB=ON L20 AND L21

L23 176 SEA ABB=ON L19(L) DEV/RL

L24 35 SEA ABB=ON L23(L) L21

L25 61 SEA ABB=ON L22 OR L24

=> d que 125

L3 STR

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      }      }
Cb~N~Cb~N~Cb~Cb
 1  2  3  4  5  6

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NODE ATTRIBUTES:

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DEFAULT ECLEVEL IS LIMITED

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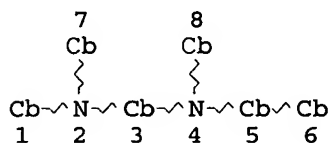
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 ECOUNT IS X6 C AT 8

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 8

## STEREO ATTRIBUTES: NONE

L4 SCR 1843  
 L11 SCR 1610  
 L14 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 8

## STEREO ATTRIBUTES: NONE

L16 686 SEA FILE=REGISTRY SSS FUL L14 AND L4 AND L11  
 L18 283 SEA FILE=REGISTRY SUB=L16 SSS FUL L3  
 L19 229 SEA FILE=HCAPLUS ABB=ON L18  
 L20 51 SEA FILE=HCAPLUS ABB=ON L19(L) PREP/RL  
 L21 QUE ABB=ON LUM!N? OR ELECTROLUM!N OR ORGANOLUM!N? OR  
 (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N? OR LIGHT? (2A) (EMI  
 T? OR EMISSION?) OR EL OR E(W)L OR L(W)E(W)D OR OLED  
 L22 31 SEA FILE=HCAPLUS ABB=ON L20 AND L21  
 L23 176 SEA FILE=HCAPLUS ABB=ON L19(L) DEV/RL  
 L24 35 SEA FILE=HCAPLUS ABB=ON L23(L) L21  
 L25 61 SEA FILE=HCAPLUS ABB=ON L22 OR L24

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 09:30:27 ON 02 AUG 2006

=> d l25 1-61 ibib abs hitstr hitind

L25 ANSWER 1 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:655610 HCAPLUS

DOCUMENT NUMBER: 145:113055

TITLE: Anthracene derivative, light emitting element  
 using the same, and light emitting device  
 using the same

INVENTOR(S): Nakashima, Harue; Kawakami, Sachiko; Kojima,  
 Kumi; Nomura, Ryoji; Ohsawa, Nobuharu

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,  
 Japan

SOURCE: PCT Int. Appl., 173 pp.  
 CODEN: PIXXD2

DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006070907	A1	20060706	WO 2005-JP24206	

2005  
1226

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

JP 2004-381181

A

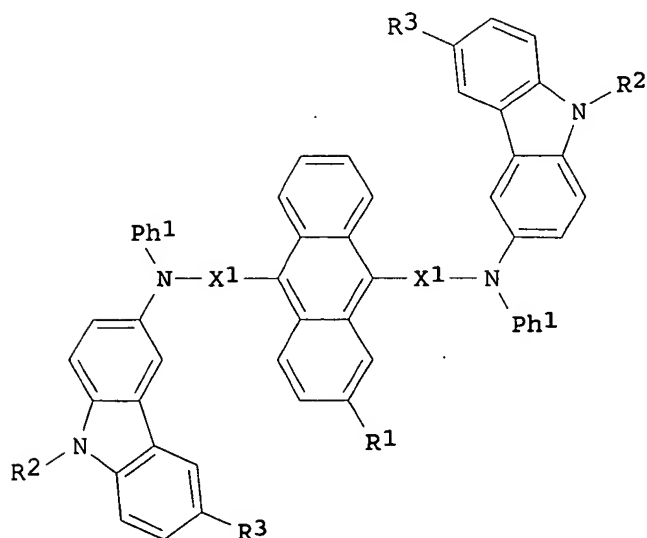
2004  
1228

JP 2005-214124

A

2005  
0725

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I

AB Luminescent anthracene derivative is represented by a general formula (I), where R1 represents hydrogen or an alkyl group having 1 to 4 C atoms, R2 represents any one of hydrogen, an alkyl group having

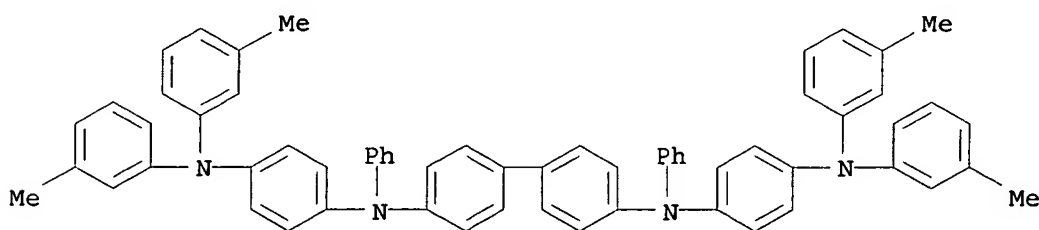
1 to 4 C atoms and an aryl group having 6 to 12 C atoms, R3 represents any one of hydrogen, an alkyl group having 1 to 4 C atoms, and an aryl group having 6 to 12 C atoms, Ph1 represents a Ph group, and X1 represents an arylene group having 6 to 15 C atoms. Electroluminescent devices employing the inventive anthracene derivs. as luminescent substances are also discussed and are resistant to repetition of an oxidation reaction and resistant to repetition of a reduction reaction.

IT 199121-98-7

(hole-transporting layer; luminescent anthracene derivs. and light-emitting elements using anthracene derivs. and)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 28, 74, 76

IT 123847-85-8, NPB 134008-76-7 199121-98-7

(hole-transporting layer; luminescent anthracene derivs. and light-emitting elements using anthracene derivs. and)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 2 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:653445 HCAPLUS

TITLE: Preparation of metal complexes with aryloxy and hydroxyquinoline derivatives for use as OLEDs in electronic devices.

INVENTOR(S): Radu, Nora Sabrina; Herron, Norman; Merlo, Jeffrey; Wang, Ying; Guidry, Mark A.

PATENT ASSIGNEE(S): E.I. Dupont de Nemours and Company, USA

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006072002	A2	20060706	WO 2005-US47476	2005 1228

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,

CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,  
 LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ,  
 OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,  
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,  
 ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
 HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
 SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

US 2004-640326P

P

2004

1230

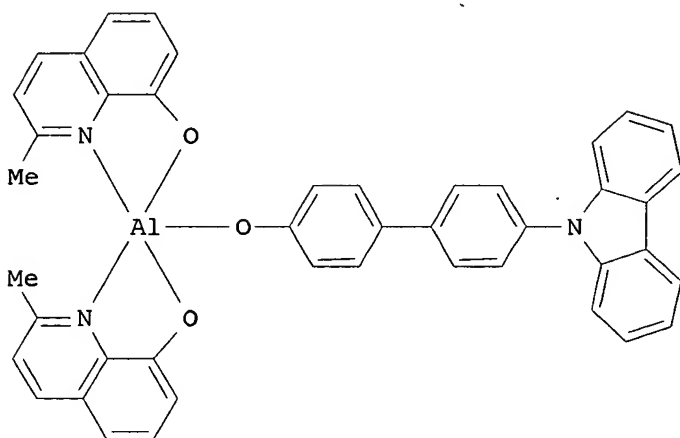
US 2005-694914P

P

2005

0628

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I

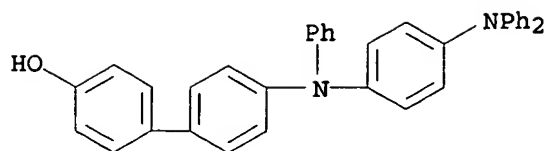
AB The preparation of organometallic complexes having at least one charge transporting ligand of general formula  $[Y_2M-O]_n$  ( $M$  = metal in +2, +3 or +4 oxidation state;  $Y$  = hydroxyaryl-N-heterocycle or bidentate Schiff base or  $Y_2$  = tetradentate Schiff base;  $CT$  = a charge transport group) and also complexes of general formula  $Y_nMZ$  ( $M$  = Al, Zn, Zr, Ga;  $Y$  = 8-hydroxyquinolate derivative and  $Z$  = phenolate or hydroxycarbazolate derivative) is described. These organometallic compds. are designed as an organic **light-emitting diode (OLED)** for use in electronic devices and sub-assemblies. Thus, an aluminum 2-methyl-8-hydroxyquinolate complex (I) and related complexes were prepared and used in the fabrication of electroluminescent devices.

IT 896427-54-6P 896427-69-3P 896427-72-8P

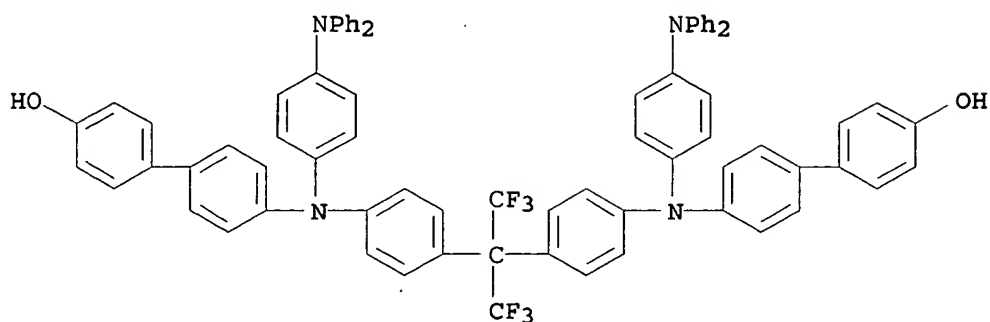
(preparation of aluminum complexes with aryloxy and hydroxyquinoline derivs.)

RN 896427-54-6 HCAPLUS

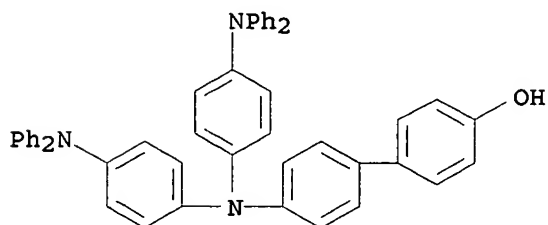
CN [1,1'-Biphenyl]-4-ol, 4'-[[4-(diphenylamino)phenyl]phenylamino]-  
 (9CI) (CA INDEX NAME)



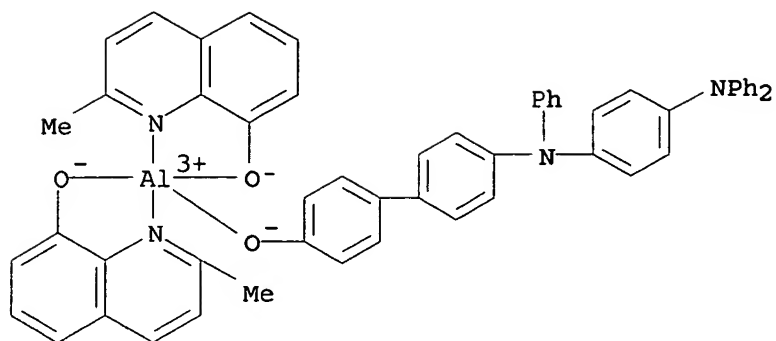
RN 896427-69-3 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 896427-72-8 HCAPLUS  
CN [1,1'-Biphenyl]-4-ol, 4'-[bis[4-(diphenylamino)phenyl]amino] -  
(9CI) (CA INDEX NAME)



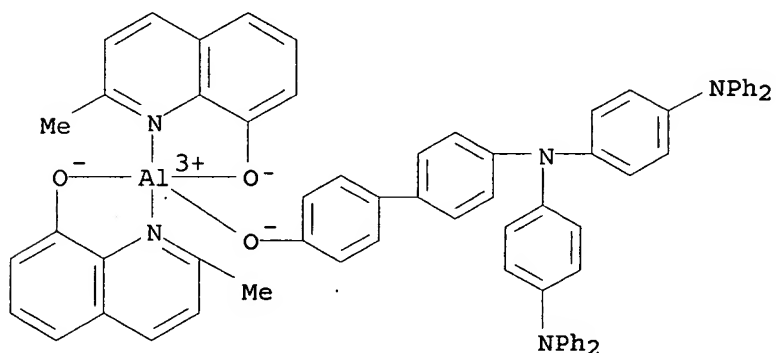
IT 896427-38-6P 896427-43-3P 896427-44-4P  
(preparation of aluminum complexes with aryloxide and  
hydroxyquinoline derivs. for use as OLEDs in electronic  
devices)  
RN 896427-38-6 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 896427-43-3 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 896427-44-4 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



CC 78-7 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 73, 74, 76  
ST aluminum hydroxyquinolate phenolate prepn OLED  
electroluminescent device  
IT 31574-87-5P 352359-43-4P 876472-35-4P 896427-51-3P  
896427-52-4P 896427-53-5P **896427-54-6P** 896427-55-7P  
896427-57-9P 896427-60-4P 896427-63-7P 896427-65-9P  
896427-67-1P **896427-69-3P** **896427-72-8P**  
896427-75-1P 896427-76-2P 896427-78-4P 896427-80-8P  
896427-81-9P  
(preparation of aluminum complexes with aryloxide and  
hydroxyquinoline derivs.)  
IT 896427-35-3P 896427-36-4P 896427-37-5P **896427-38-6P**  
896427-39-7P 896427-40-0P 896427-41-1P 896427-42-2P  
**896427-43-3P** **896427-44-4P** 896427-45-5P  
896427-46-6P 896427-47-7P 896427-48-8P 896427-49-9P  
896427-50-2P  
(preparation of aluminum complexes with aryloxide and  
hydroxyquinoline derivs. for use as OLEDs in electronic  
devices)

L25 ANSWER 3 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:558233 HCAPLUS  
 DOCUMENT NUMBER: 145:53072  
 TITLE: Light-emitting element and light-emitting device using the same  
 INVENTOR(S): Sakata, Junichiro; Ikeda, Hisao; Kawakami, Sachiko  
 PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 115 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006062218	A1	20060615	WO 2005-JP22715	2005 1205

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
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 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,  
 LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ,  
 OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,  
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,  
 ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
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 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
 SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

JP 2006190993	A2	20060720	JP 2005-349666	2005 1202
PRIORITY APPLN. INFO.:			JP 2004-353389	A 2004 1206
			JP 2004-353406	A 2004 1206

AB Light-emitting elements that include a pair of electrodes between which several layers are formed are described in which  $\geq 1$  layer includes a metal oxide and either an organic compound that has a glass-transition temperature of  $\geq 150^\circ$  (preferably  $\geq 160^\circ$ ) and  $\leq 300^\circ$  or a compound having a spiro ring and a triphenylamine skeleton (especially a benzidine derivative). The organic compound may serve as a hole-transporting material. The organic compound may be obtained by a coupling reaction of N,N'-diphenylbenzidine with 2-bromo-spiro -9,9'-bifluorene or a 2-bromo-2',7'-dialkylspiro-9,9'-bifluorene.

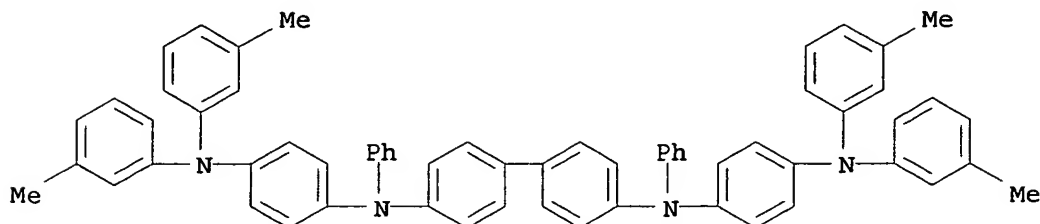
IT 199121-98-7

(light-emitting elements with metal  
 oxide-organic compound mixture-containing layers)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-

methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

IT 517-51-1, Rubrene 1313-96-8, Niobium oxide 1314-23-4, Zirconium oxide, uses 1314-35-8, Tungsten oxide, uses 1314-61-0, Tantalum oxide 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide 11113-84-1, Ruthenium oxide 11118-57-3, Chromium oxide 12055-23-1, Hafnium oxide 12624-27-0, Rhenium oxide 13463-67-7, Titanium oxide, uses 199121-98-7

(light-emitting elements with metal

oxide-organic compound mixture-containing layers)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 4 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:544401 HCAPLUS

DOCUMENT NUMBER: 145:53407

TITLE: A phosphorescent organometallic complex for use as a light-emitting element having good chromaticity for light-emitting devices

INVENTOR(S): Inoue, Hideko; Seo, Satoshi; Ohsawa, Nobuharu

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: PCT Int. Appl., 139 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006059802	A1	20060608	WO 2005-JP22593	20051201

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,



HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
 SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
 JP 2006182772 A2 20060713 JP 2005-347754

2005  
 1201

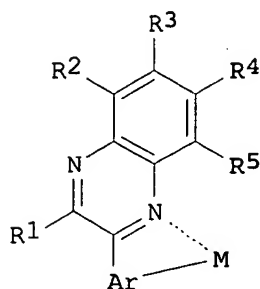
PRIORITY APPLN. INFO.:

JP 2004-351770

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2004  
 1203

GI



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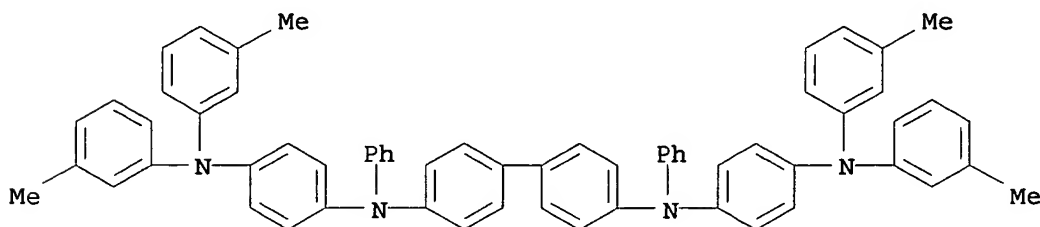
AB A phosphorescent organometallic complex is described for use as a light-emitting element having good chromaticity for light-emitting devices. Thus, the organometallic complex includes a structure I (R1 = C1-4 alkyl; R2-R5 = H, halogen, acyl, alkyl, alkoxyl, aryl, CN, heterocycle; Ar = aryl, heterocycle, preferably, an aryl group has an electron withdrawing group or a heterocyclic group has an electron withdrawing group; M = Group 9- or Group 10 element).

IT 199121-98-7

(characterization of light-emitting devices  
 containing phosphorescent organometallic complexes)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 29, 73

IT 2085-33-8, Alq3 7439-93-2, Lithium, uses 7631-86-9, Silica, uses 50926-11-9, ITO 58328-31-7, 4,4'-Bis-(N-carbazolyl)biphenyl 123847-85-8, NPB 199121-98-7

(characterization of light-emitting devices  
containing phosphorescent organometallic complexes)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

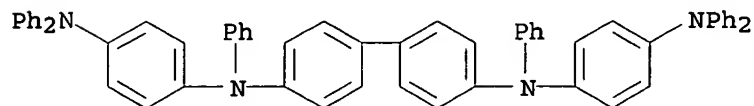
L25 ANSWER 5 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2006:538865 HCAPLUS  
DOCUMENT NUMBER: 145:37410  
TITLE: Organic electroluminescent device  
INVENTOR(S): Kawamura, Hisayuki; Kubota, Mineyuki;  
Funahashi, Masakazu  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 67 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006059512	A1	20060608	WO 2005-JP21469	2005 1122
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2006156888	A2	20060615	JP 2004-348675	2004 1201
US 2006158102	A1	20060720	US 2005-288281	2005 1129
PRIORITY APPLN. INFO.:			JP 2004-348675	A 2004 1201

AB Disclosed is an organic electroluminescent device comprising at least an anode, a cathode and an organic light-emitting layer interposed between the electrodes, wherein the organic light-emitting layer contains one or more host materials, a hole-trapping dopant and an electron-trapping dopant. By having the hole-trapping dopant and the electron-trapping dopant coexist in the organic light-emitting layer, the organic electroluminescent device can have a longer life.

IT 209980-53-0  
(hole implantation layers; organic electroluminescent devices containing light emitting layers containing hole- and electron trapping dopants)

RN 209980-53-0 HCAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-(diphenylamino)phenyl]-  
 N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 76

IT 209980-53-0  
 (hole implantation layers; organic electroluminescent devices  
 containing light emitting layers containing hole-  
 and electron trapping dopants)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 6 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:463508 HCAPLUS

DOCUMENT NUMBER: 144:477430

TITLE: Method for manufacturing light emitting device  
 INVENTOR(S): Yamazaki, Shunpei; Hayakawa, Masahiko; Kamata,  
 Koichiro; Tomatsu, Hiroyuki; Ikeda, Hisao;  
 Sakata, Junichiro

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,  
 Japan

SOURCE: U.S. Pat. Appl. Publ., 51 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2006102910	A1	20060518	US 2005-259689	2005 1026
JP 2006154793	A2	20060615	JP 2005-314914	2005 1028
CN 1791288	A	20060621	CN 2005-10131568	2005 1028
PRIORITY APPLN. INFO.:			JP 2004-316742	A 2004 1029

AB Light-emitting devices are described which comprise a  
 light-emitting element including a first electrode, a second  
 electrode opposed to the first electrode, and a mixed layer of  
 metal oxide and an organic compound provided between the first  
 electrode and the second electrode; a transistor connected to the  
 light emitting element; and a monitor light emitting element

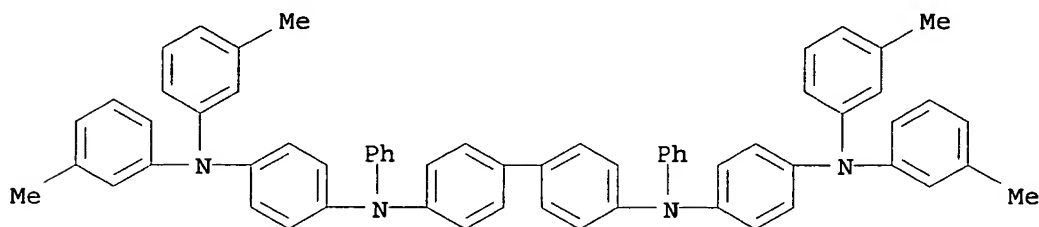
connected to the light emitting element; drive is performed by applying forward or forward and reverse voltages to the light-emitting element in aging treatment of a panel having the light-emitting element. An image may be displayed with the light-emitting element and the location of the image changed at a predetd. interval.

IT 199121-98-7

(light-emitting devices with mixed oxide-organic layers subjected to aging drive)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



INCL 257083000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 11098-99-0, Molybdenum oxide 50926-11-9, ITO 123847-85-8, α-NPD 199121-98-7

(light-emitting devices with mixed oxide-organic layers subjected to aging drive)

L25 ANSWER 7 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:411892 HCAPLUS

DOCUMENT NUMBER: 144:450516

TITLE: Preparation of aromatic amine compounds and organic electroluminescent device using them  
INVENTOR(S): Kawamura, Masahiro; Kawamura, Hisayuki; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 104 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006046441	A1	20060504	WO 2005-JP19122	2005 1018

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,

TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
 ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
 HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
 SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.:

JP 2004-316937

A

2004

1029

OTHER SOURCE(S):

MARPAT 144:450516

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT

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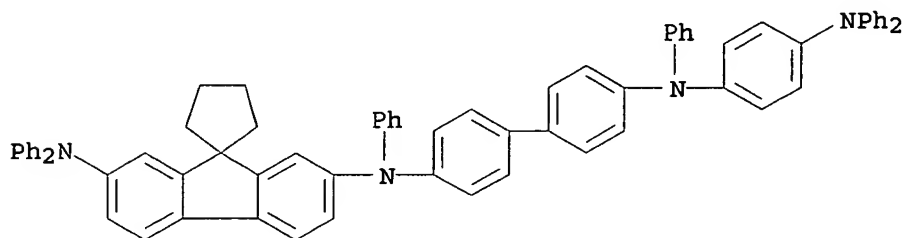
AB Aromatic amine compds. of a specific structure having at least one fluorene structure represented by the formula (I) [Ar1-Ar6 = each (un)substituted aryl group having 5-60 nuclear carbon atoms or heteroaryl group having 3-60 nuclear carbon atoms; L1-L3 = each (un)substituted arylene group having 5-60 nuclear carbon atoms or heteroarylene group having 3-60 nuclear carbon atoms] are prepared There is also disclosed an organic electroluminescent device wherein an organic thin film composed of one or more layers including at least a **light-emitting** layer is interposed between a cathode and an anode and at least one layer in the organic thin film contains the aromatic amine compound I by itself or as a component of a mixture Such an organic electroluminescent device has various **luminescent** hues, high heat resistance, long life, high **luminance** and high **luminous** efficiency. The above-mentioned novel aromatic amine compds. enable to realize such an organic electroluminescent device as having various **luminescent** hues, high heat resistance, long life, high **luminance** and high **luminous** efficiency. Thus, spiro[cyclohexane-1,9'-[9H]fluorene] derivative (II) was coupled with 4,4'-diiodo-1,1'-biphenyl in the presence of Pd2(dba)3, tri(tert-butyl)phosphine, and sodium tert-butoxide in toluene at room temperature for 5 h to give N,N'-diphenyl-N',N-bis[4-[N-phenyl-N-[spiro[cyclohexane-1,9'-[9H]fluorene]-2'-yl]amino]phenyl]-1,1'-biphenyl-4,4'-diamine (III). An organic electroluminescent device with a hole-injection layer fabricated by vapor-deposition of the compound III **emitted** blue light with **luminance** efficiency of 4.8 cd/A, c.d. of 530 mA/cm2, and half life of 5,500 h at 13 V.

IT 885684-35-5P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[7'-(diphenylamino)spiro[cyclopentane-1,9'-[9H]fluorene]-2'-yl]-N-phenylamino]-1,1'-biphenyl  
 885684-36-6P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[7-(diphenylamino)-9,9-dimethylfluoren-2-yl]-N-phenylamino]-1,1'-biphenyl 885684-38-8P,  
 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[9,9-dimethylfluoren-2-yl]-N-[4-(diphenylamino)phenyl]amino]-1,1'-biphenyl 885684-42-4P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[4-(Diphenylamino)phenyl]-N-[spiro[cyclohexane-1,9'-[9H]fluorene]-2'-yl]amino]-1,1'-biphenyl  
 (preparation of aromatic amine compds. and organic electroluminescent

device using them)

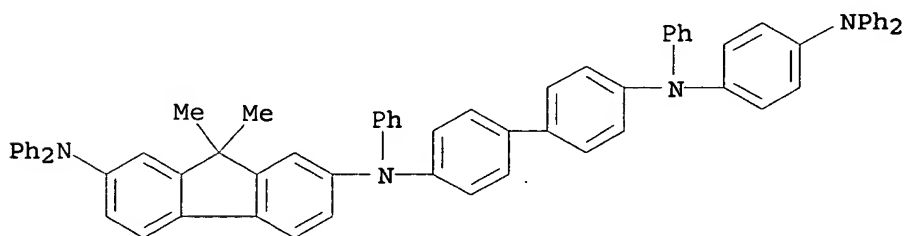
RN 885684-35-5 HCAPLUS

CN Spiro[cyclopentane-1,9'-[9H]fluorene]-2',7'-diamine,  
N-[4'-[[4-(diphenylamino)phenyl]phenylamino][1,1'-biphenyl]-4-yl]-  
N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



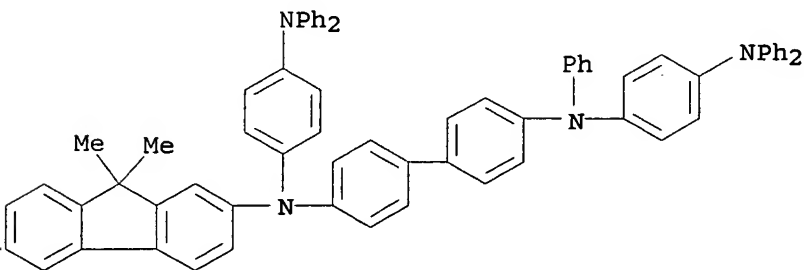
RN 885684-36-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N-[4'-[[4-(diphenylamino)phenyl]phenylami  
no][1,1'-biphenyl]-4-yl]-9,9-dimethyl-N,N',N'-triphenyl- (9CI)  
(CA INDEX NAME)



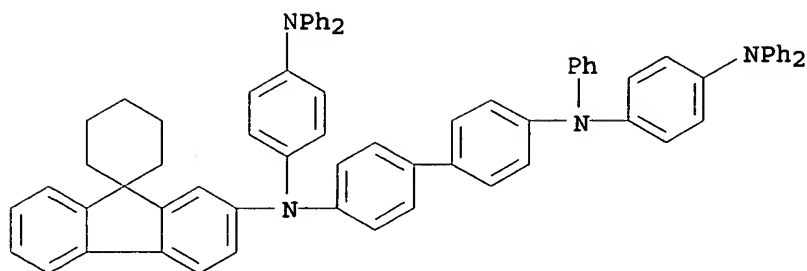
RN 885684-38-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-(9,9-dimethyl-9H-fluoren-2-yl)-  
N,N'-bis[4-(diphenylamino)phenyl]-N'-phenyl- (9CI) (CA INDEX  
NAME)



RN 885684-42-4 HCAPLUS

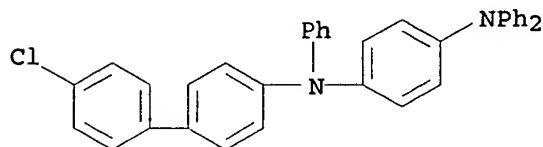
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-(diphenylamino)phenyl]-N-  
phenyl-N'-spiro[cyclohexane-1,9'-[9H]fluoren]-2'-yl- (9CI) (CA  
INDEX NAME)



IT 885684-34-4P, N-(4'-Chloro-1,1'-biphenyl-4-yl)-N,N',N'-triphenyl-1,4-phenylenediamine  
(preparation of aromatic amine compds. and organic electroluminescent device using them)

RN 885684-34-4 HCAPLUS

CN 1,4-Benzenediamine, N-(4'-chloro[1,1'-biphenyl]-4-yl)-N,N',N'-triphenyl- (9CI) (CA INDEX NAME)



CC 25-23 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 73

IT 463302-85-4P, 4,4'-Bis[N-(7-(diphenylamino)-9,9-dimethylfluoren-2-yl)-N-phenylamino]-1,1'-biphenyl 885684-27-5P,  
N,N'-Diphenyl-N',N'-bis[4-[N-phenyl-N-[spiro[cyclohexane-1,9'-[9H]fluorene]-2'-yl]amino]phenyl]-1,1'-biphenyl-4,4'-diamine  
885684-29-7P, 4,4'-Bis[N-[4-(diphenylamino)phenyl]-N-(9,9-dimethylfluoren-2-yl)amino]-1,1'-biphenyl 885684-32-2P,  
4,4'-Bis[N-[7'-(diphenylamino)spiro[cyclopentane-1,9'-[9H]fluorene]-2'-yl]-N-phenylamino]-1,1'-biphenyl  
885684-35-5P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[7'-(diphenylamino)spiro[cyclopentane-1,9'-[9H]fluorene]-2'-yl]-N-phenylamino]-1,1'-biphenyl  
885684-36-6P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[7-(diphenylamino)-9,9-dimethylfluoren-2-yl]-N-phenylamino]-1,1'-biphenyl 885684-38-8P,  
4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[9,9-dimethylfluoren-2-yl]-N-[4-(diphenylamino)phenyl]amino]-1,1'-biphenyl 885684-40-2P, 4,4'-Bis[N-[4-(diphenylamino)phenyl]-N-[spiro[cyclohexane-1,9'-[9H]fluorene]-2'-yl]amino]-1,1'-biphenyl  
885684-42-4P, 4-[N-[4-(Diphenylamino)phenyl]-N-phenylamino]-4'-[N-[4-(Diphenylamino)phenyl]-N-[spiro[cyclohexane-1,9'-[9H]fluorene]-2'-yl]amino]-1,1'-biphenyl 885684-44-6P,  
4,4'-Bis[N-phenyl-N-[4-[N-(9,9-dimethylfluoren-2-yl)-N-phenylamino]phenyl]amino]-1,1'-biphenyl  
(preparation of aromatic amine compds. and organic electroluminescent device using them)

IT 531-91-9P, 4,4'-Bis(phenylamino)-1,1'-biphenyl 2350-01-8P,  
N,N-Diphenyl-4-aminoaniline 4316-57-8P, N,N-Diphenyl-4-nitroaniline 99586-26-2P, 2-Bromo-7-chlorofluorene

308814-72-4P, 2-(Diphenylamino)-7-(phenylamino)-9,9-dimethylfluorene 355832-04-1P, 2-(Phenylamino)-9,9-dimethylfluorene 605630-42-0P, 2-Chloro-9,9-dimethyl-7-(diphenylamino)fluorene 797056-48-5P, 2'-Bromospiro[cyclohexane-1,9'-[9H]fluorene] 885684-24-2P, 2'-(Phenylamino)spiro[cyclohexane-1,9'-[9H]fluorene] 885684-25-3P, 2'-[N-(4-Bromophenyl)-N-phenylamino]spiro[cyclohexane-1,9'-[9H]fluorene] 885684-26-4P, 2'-[N-[4-(Phenylamino)phenyl]-N-phenylamino]spiro[cyclohexane-1,9'-[9H]fluorene] 885684-28-6P, 2'-[(4-Diphenylaminophenyl)amino]-9,9-dimethylfluorene 885684-30-0P, 2'-Bromo-7'-chlorospiro[cyclopentane-1,9'-[9H]fluorene] 885684-31-1P, 2'-Chloro-7'-(diphenylamino)spiro[cyclopentane-1,9'-[9H]fluorene] 885684-33-3P, 2'-(Diphenylamino)-7'-(phenylamino)spiro[cyclopentane-1,9'-[9H]fluorene] 885684-34-4P, N-(4'-Chloro-1,1'-biphenyl-4-yl)-N,N',N'-triphenyl-1,4-phenylenediamine 885684-37-7P, N-(4'-Chloro-1,1'-biphenyl-4-yl)-N-(9,9-dimethylfluorene-2-yl)-N',N'-diphenyl-1,4-phenylenediamine 885684-39-9P, 2'-[[4-(Diphenylamino)phenyl]amino]spiro[cyclohexane-1,9'-[9H]fluorene] 885684-41-3P, 2'-[N-[4-(Diphenylamino)phenyl]-N-(4'-chloro-1,1'-biphenyl-4-yl)amino]spiro[cyclohexane-1,9'-[9H]fluorene] 885684-43-5P, 2-[N-(4-Bromophenyl)-N-phenylamino]-9,9-dimethylfluorene  
(preparation of aromatic amine compds. and organic electroluminescent device using them)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 8 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:301305 HCAPLUS

DOCUMENT NUMBER: 144:340490

TITLE: Light-emitting devices with structures for minimizing work function considerations in electrode material choices

INVENTOR(S): Kumaki, Daisuke; Seo, Satoshi

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: PCT Int. Appl., 118 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2006033285	A1	20060330	WO 2005-JP17076	

2005  
0909

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,



SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
PRIORITY APPLN. INFO.: JP 2004-278259 A

2004  
0924

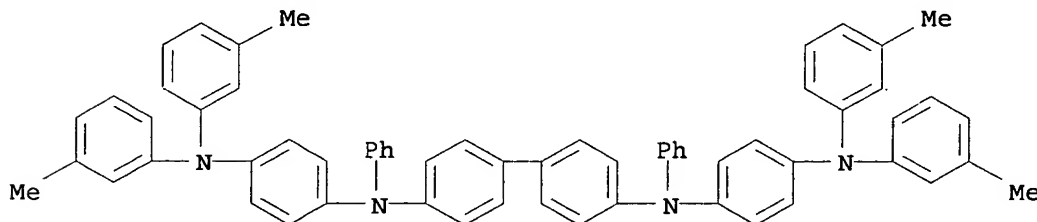
AB Light-emitting devices are described in which layers having donor and acceptor levels are arranged so that the work function of an electrode does not need to be considered in selecting the electrode materials. Preferably,  $\geq 1$  electrode is in contact with a layer having a donor level or comprising a material mixture in which a first substance with an electron mobility which is higher than its hole mobility is mixed with a substance that can donate an electron to the first substance; this layer is also in contact with layer having an acceptor layer or electron-accepting material. Displays employing the devices are discussed.

IT 199121-98-7

(light-emitting devices with structures for minimizing work function considerations in electrode material choices)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 1313-27-5, Molybdenum(VI)oxide, uses 1662-01-7,  
Bathophenanthroline 2085-33-8, Tris(8-quinolinolato)aluminum  
4733-39-5, Bathocuproin 7429-90-5, Aluminum, uses 179864-41-6,  
Indium silicon tin oxide 199121-98-7

(light-emitting devices with structures for minimizing work function considerations in electrode material choices)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 9 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:297688 HCAPLUS

DOCUMENT NUMBER: 144:340463

TITLE: Light-emitting devices with hole-generating  
layers with optical characteristic-dependent  
thicknesses

INVENTOR(S): Seo, Satoshi; Kumaki, Daisuke; Ikeda, Hisao;  
Sakata, Junichiro

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,

SOURCE: Japan  
 PCT Int. Appl., 82 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006033472	A1	20060330	WO 2005-JP18062	

2005  
0922

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
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 KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY,  
 MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM,  
 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,  
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
 ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
 HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,  
 SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

JP 2006156344 A2 20060615 JP 2005-278926

2005  
0926

PRIORITY APPLN. INFO.:

JP 2004-278520 A

2004  
0924

JP 2004-316089 A

2004  
1029

JP 2004-316228 A

2004  
1029

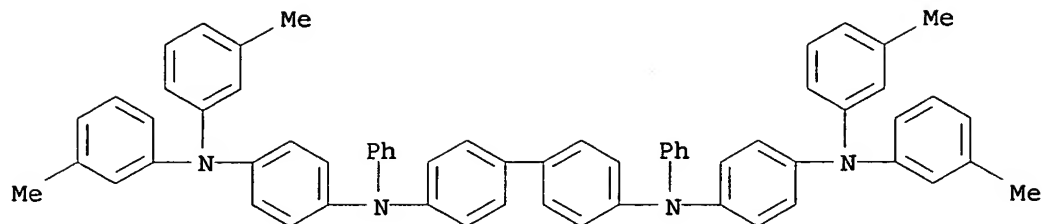
AB Light-emitting elements are described which include a  
 hole-generating layer having a thickness selected to produce  
 desired optical characteristics. The hole-generating layer may  
 comprise a mixture of an organic compound and a metal oxide.  
 Light-emitting devices (e.g., displays) incorporating multiple  
 elements in which the hole-generating layers have differing  
 thicknesses are also described. By using layers in which an organic  
 compound and a metal oxide are mixed, the driving voltage is not  
 increased even when the thickness is increased.

IT 199121-98-7

(light-emitting devices with  
 hole-generating layers with optical characteristic-dependent  
 thicknesses)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-  
 methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 147-14-8, Copper phthalocyanine 574-93-6, Phthalocyanine  
 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide  
 12624-27-0, Rhenium oxide 13930-88-6, Vanadylphthalocyanine  
 65181-78-4, 4,4'-Bis[N-(3-methylphenyl)-N-phenylamino]biphenyl;  
 105389-36-4, 4,4',4'''-Tris(N,N-diphenylamino)triphenylamine;  
 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
 124729-98-2, 4,4',4'''-Tris[N-(3-methylphenyl)-N-phenylamino]triphenylamine; 199121-98-7

(light-emitting devices with  
 hole-generating layers with optical characteristic-dependent  
 thicknesses)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 10 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:77170 HCAPLUS

DOCUMENT NUMBER: 144:159921

TITLE: Light emitting element and light emitting  
 device using the same

INVENTOR(S): Kumaki, Daisuke; Seo, Satoshi

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,  
 Japan

SOURCE: PCT Int. Appl., 82 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006009262	A1	20060126	WO 2005-JP13516	

2005  
 0715

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
 MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG,  
 PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
 HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI,  
 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL,

SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
PRIORITY APPLN. INFO.: JP 2004-216503 A

2004  
0723

JP 2005-76184 A

2005  
0317

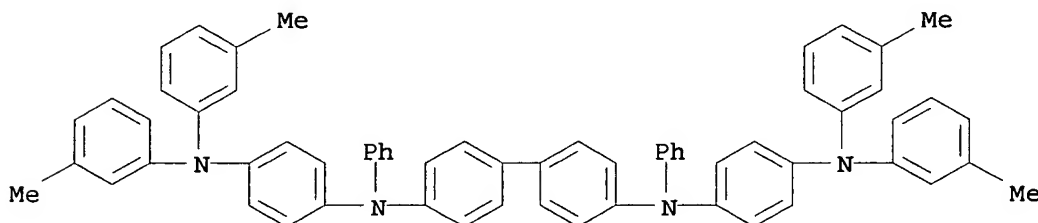
AB An object of the prevent invention is to provide a light emitting element having slight increase in driving voltage with accumulation of light emitting time. Another object of the invention is to provide a light emitting element having slight increase in resistance value with increase in film thickness. A light emitting element of the invention includes a 1st layer for generating holes, a 2nd layer for generating electrons and a 3rd layer comprising a light emitting substance between 1st and 2nd electrodes. The 1st and 3rd layers are in contact with the 1st and 2nd electrodes, resp. The 2nd and 3rd layers are connected to each other so as to inject electrons generated in the 2nd layer into the 3rd layer when applying the voltage to the light emitting element such that a potential of the 2nd electrode is higher than that of the 1st electrode.

IT 199121-98-7

(for light emitting element and its use in  
LED)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-quinolinolato)aluminum 11098-99-0, Molybdenum oxide 50926-11-9, ITO 123847-85-8, NPB (photoreceptor) 199121-98-7

(for light emitting element and its use in  
LED)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 11 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:31557 HCAPLUS

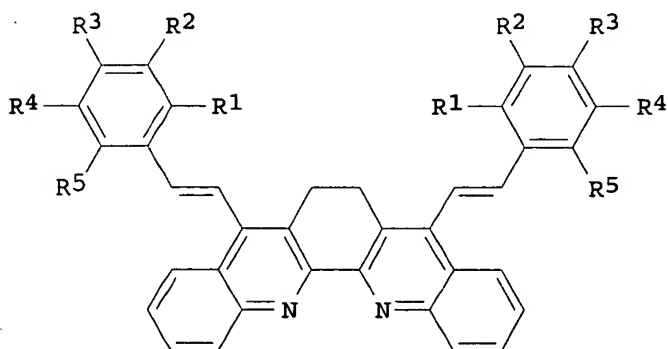
DOCUMENT NUMBER: 144:138540

TITLE: Phenanthroline derivative and light emitting element and light emitting device using the same

INVENTOR(S): Nomura, Ryoji; Kumaki, Daisuke  
 PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,  
 Japan  
 SOURCE: PCT Int. Appl., 56 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006004138	A1	20060112	WO 2005-JP12436	2005 0629
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM JP 2006045211      A2      20060216      JP 2005-194534				
				2005 0704
PRIORITY APPLN. INFO.:			JP 2004-200059	A
				2004 0707

GI



I

AB A phenanthroline derivative represented by a general formula I (where each of R1-R5 = H, C1-C4 alkyl, or halogen) is described, where the material may be used for an electron injecting material. A light-emitting element comprising the phenanthroline derivative and at least one element selected from alkali metals and alkali-earth metals is also described. An electronic device using the

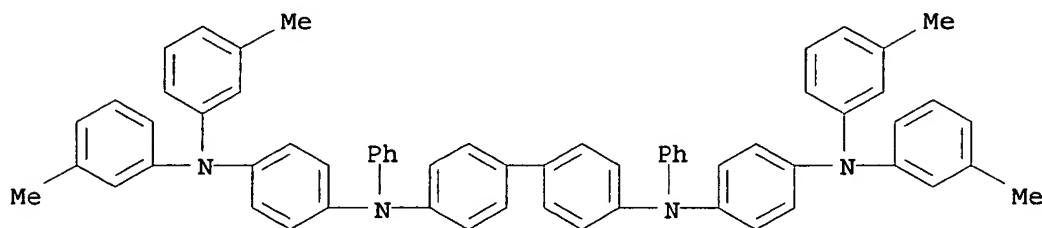
light-emitting device is also described.

IT 199121-98-7

(phenanthroline derivative and light emitting element and light emitting device using the same)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07D471-04

ICS H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 27, 76

IT 2085-33-8, AlQ3 7439-93-2, Lithium, uses 7440-21-3, Silicon, uses 38215-36-0, Coumarin 6 50926-11-9, Indium tin oxide 123847-85-8,  $\alpha$ -NPD 199121-98-7

(phenanthroline derivative and light emitting element and light emitting device using the same)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 12 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1262609 HCAPLUS

DOCUMENT NUMBER: 144:13890

TITLE: High-efficiency white-light-emitting elements and light-emitting devices

INVENTOR(S): Yamazaki, Shunpei; Seo, Satoshi

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: PCT Int. Appl., 73 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005115059	A1	20051201	WO 2005-JP9284	

2005  
0516

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,

MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG,  
 PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH,  
 CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT,  
 LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF,  
 CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 JP 2006012793 A2 20060112 JP 2005-146487

2005  
 0519

PRIORITY APPLN. INFO.:

JP 2004-152619

A

2004  
 0521

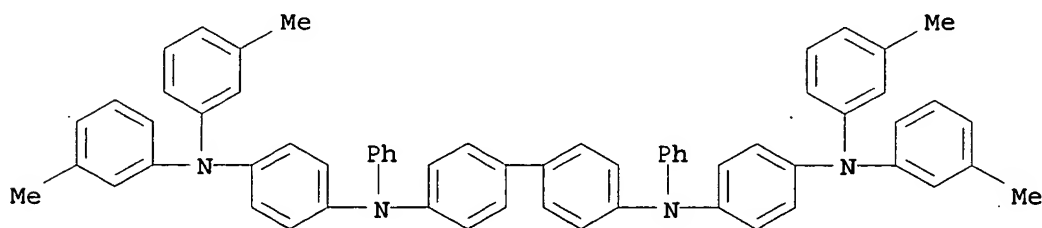
AB Light-emitting devices are described which comprise a first light-emitting element having a first light-emitting layer including a light-emitting organic compound between a first anode and a first cathode; and a second light-emitting element having a second light-emitting layer including a light-emitting organic compound between a second anode and a second cathode, where the first light-emitting element and the second light-emitting element are connected in series with the first cathode being in contact with the second anode, and where the first light-emitting element shows a first spectrum having at least two peaks and the second light-emitting element shows a second emission spectrum having a peak in a different position from positions of the two peaks.

IT 199121-98-7

(high-efficiency white-light-emitting  
 elements and light-emitting devices)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 147-14-8, Copper phthalocyanine 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 4733-39-5, Bathocuproin 7429-90-5, Aluminum, uses 11098-99-0, Molybdenum oxide 34777-53-2 50926-11-9, Indium tin oxide 58328-31-7, CBP 122648-99-1 123847-85-8,  $\alpha$ -NPD 146162-54-1, BA1q 199121-98-7

(high-efficiency white-light-emitting  
 elements and light-emitting devices)

REFERENCE COUNT:

13

THERE ARE 13 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 13 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1241143 HCAPLUS  
 DOCUMENT NUMBER: 143:485594  
 TITLE: Organic electroluminescent device having  
 charge blocking layer between two  
 light-emitting layers  
 INVENTOR(S): Arakane, Takashi; Kuma, Hitoshi; Kawamura,  
 Hisayuki; Iwakuma, Toshihiro; Hosokawa,  
 Chishio  
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 57 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005112518	A1	20051124	WO 2005-JP4486	2005 0315

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
 MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
 PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN,  
 TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH,  
 CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT,  
 LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF,  
 CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2004-88463 A 2004  
 0325

AB The invention relates to an organic electroluminescent device comprising an anode, a first light-emitting layer, a charge blocking layer, a second light-emitting layer and a cathode sequentially arranged in this order is disclosed wherein the ionization potential of the charge blocking layer is higher than that of the first light-emitting layer by 0.1 eV or more and the affinity level of the charge blocking layer is lower than those of the first light-emitting layer and the second light-emitting layer by 0.1 eV or more.

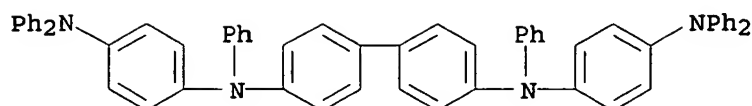
IT 209980-53-0

(organic electroluminescent device having charge blocking layer between two light-emitting layers)

RN 209980-53-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-(diphenylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)





IC ICM H05B033-12  
ICS H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22  
IT 2085-33-8, Alq3 4733-39-5, BCP 13463-67-7, Titanium oxide, uses 58328-31-7, CBP 123847-85-8,  $\alpha$ -NPD 139092-78-7 142289-08-5 209980-53-0 279672-58-1 364765-18-4 869654-26-2  
(organic electroluminescent device having charge blocking layer between two light-emitting layers)  
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 14 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2005:1076081 HCAPLUS  
DOCUMENT NUMBER: 143:356354  
TITLE: Arylamine compound and organic electroluminescent device  
INVENTOR(S): Miki, Tetsuzo; Tarumoto, Naohiro; Taniguchi, Yoshio; Ichikawa, Musubu  
PATENT ASSIGNEE(S): Hodogaya Chemical Co., Ltd., Japan; Shinshu University  
SOURCE: PCT Int. Appl., 42 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005094133	A1	20051006	WO 2005-JP6426	

2005  
0325

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RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2004-89836 A  
2004  
0325

JP 2004-90334

A

2004  
0325

OTHER SOURCE(S): MARPAT 143:356354

AB Disclosed is an arylamine compound represented by the general formula  $(R5R6N-Ar3)_n-X-[(Ar1-NR1R2)]-Ar2-NR3R4$  which has a mol. weight of not less than 1,500 and not more than 6,000. Also disclosed is an organic electroluminescent device containing such a compound. The arylamine compound has excellent hole injection/transporting characteristics, and enables to form a stable thin film. By using such a compound, an organic EL device can be greatly improved in the luminous efficiency and durability when compared with conventional organic EL devices.

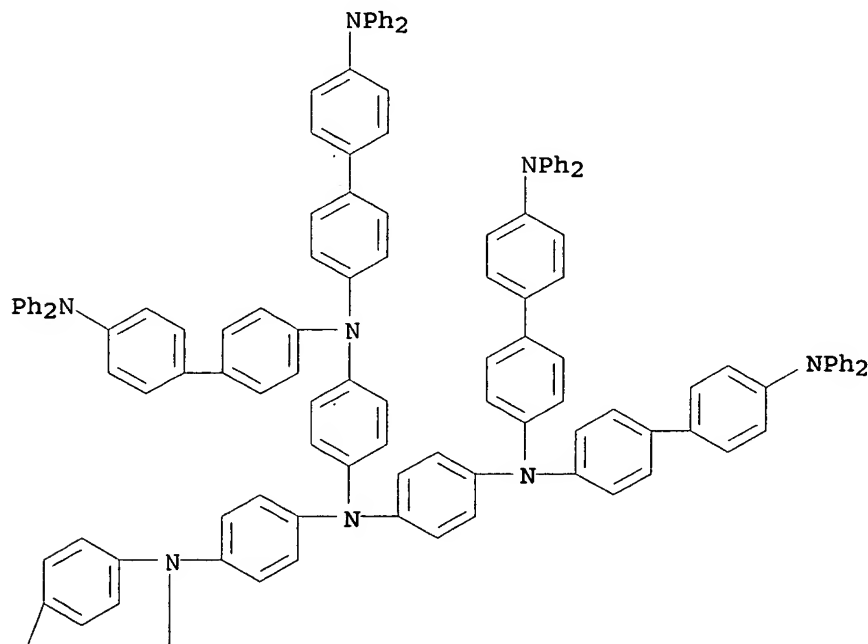
IT 866024-27-3P

(arylamine compound and organic electroluminescent device)

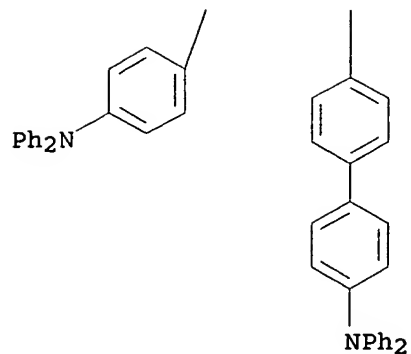
RN 866024-27-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'',N''''-(nitrilotri-4,1-phenylene)tris[N-[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

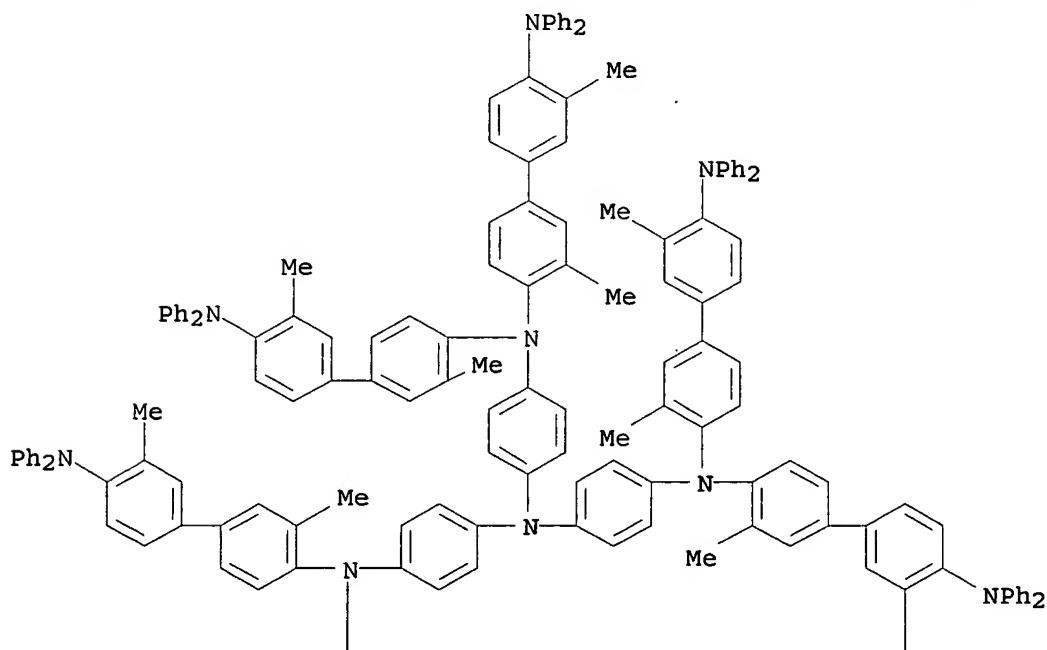


PAGE 2-A

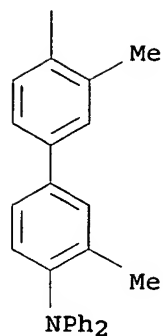


IT 866024-28-4P 866024-29-5P  
 (arylamine compound and organic electroluminescent device)  
 RN 866024-28-4 HCAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'',N''''-(nitritotri-4,1-phenylene)tris[N-(4'-(diphenylamino)-3,3'-dimethyl[1,1'-biphenyl]-4-yl)-3,3'-dimethyl-N',N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

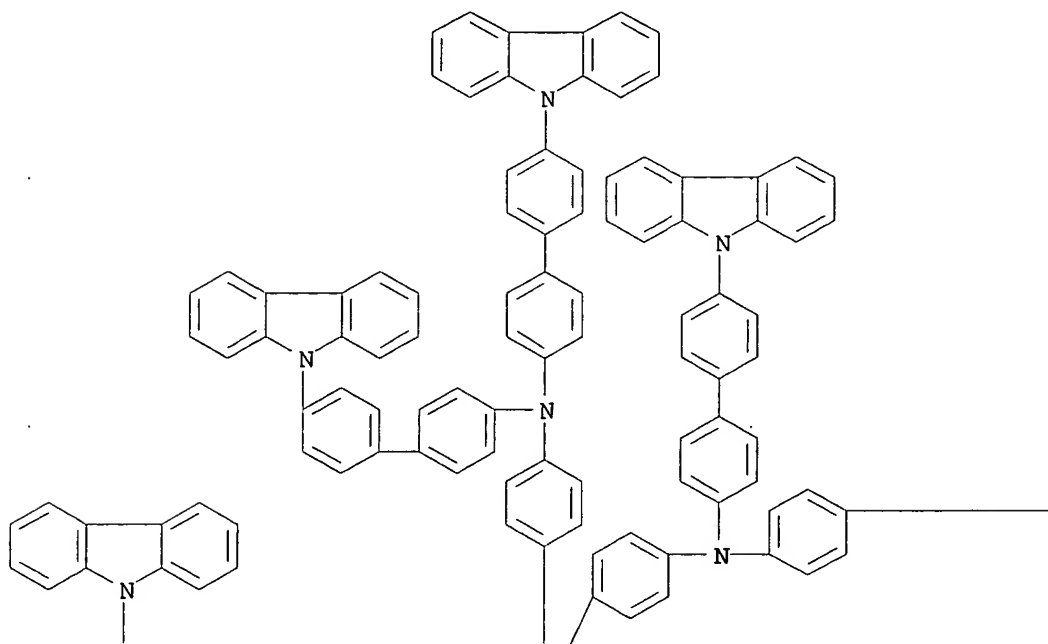


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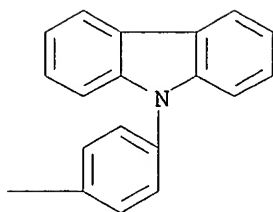
RN 866024-29-5 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]amino]phenyl]-N',N'-bis[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

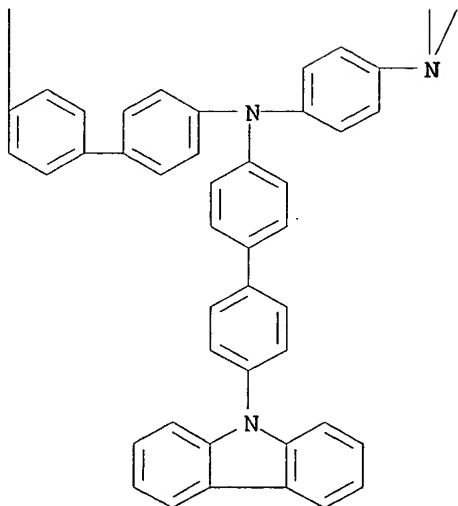
PAGE 1-A



PAGE 1-B



PAGE 2-A

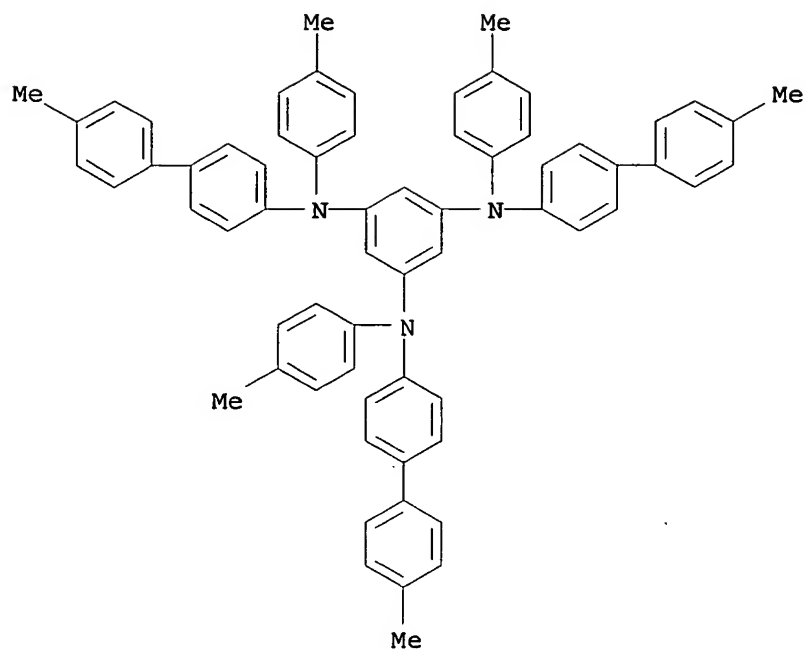


IC ICM H05B033-22  
ICS C07C211-54; C07D209-86; C09K011-06; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25  
IT 866024-27-3P  
(arylamine compound and organic electroluminescent device)  
IT 866024-28-4P 866024-29-5P 866024-39-7P  
(arylamine compound and organic electroluminescent device)  
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 15 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:902553 HCAPLUS  
 DOCUMENT NUMBER: 143:238366  
 TITLE: Organic electroluminescent device  
 INVENTOR(S): Kato, Tetsuya; Kojima, Kazushige  
 PATENT ASSIGNEE(S): Denso Corporation, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 22 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

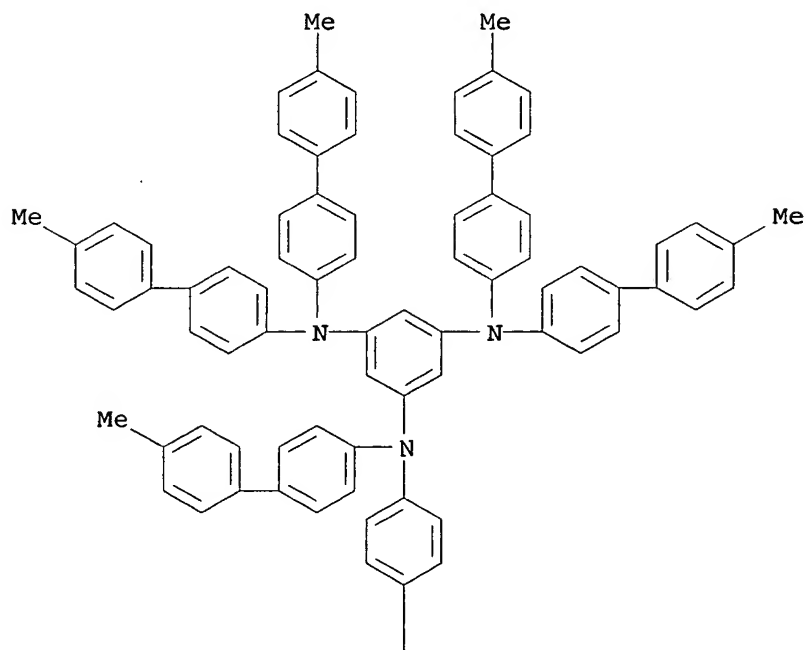
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005184657	A1	20050825	US 2005-61449	2005 0222
JP 2005276802	A2	20051006	JP 2004-302986	2004 1018
PRIORITY APPLN. INFO.:			JP 2004-49462	A 2004 0225
			JP 2004-302986	A 2004 1018

OTHER SOURCE(S): MARPAT 143:238366  
 AB An organic EL device includes a pair of electrodes, a light emitter layer obtained by mixing a hole transporting material made of a tertiary amine compound, an electron transporting material and a light emitting additive. The tertiary amine compound constituting the hole transporting material has only one oxidation potential as measured by the cyclic voltammetry. A difference in ionization potential between the hole transporting material and electron transporting material of the light emitter layer is 0.35 eV or greater.  
 IT 852641-11-3P 863012-94-6P  
 (organic electroluminescent device)  
 RN 852641-11-3 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N',N''-tris(4'-methyl[1,1'-biphenyl]-4-yl)-N,N',N''-tris(4-methylphenyl)- (9CI) (CA INDEX NAME)

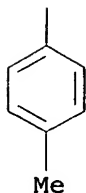


RN 863012-94-6 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N''-hexakis(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H01J001-62  
 INCL 313504000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74  
 IT 147951-36-8P 697234-81-4P 852641-11-3P  
 863012-94-6P  
 (organic electroluminescent device)

L25 ANSWER 16 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:369013 HCAPLUS  
 DOCUMENT NUMBER: 142:400359  
 TITLE: Light-emitting element, light-emitting device using the light-emitting element, and electric appliance using the light-emitting device  
 INVENTOR(S): Seo, Satoshi; Abe, Hiroko; Ikeda, Hisao  
 PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 20 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005088083	A1	20050428	US 2004-967267	2004 1019
CN 1612663	A	20050504	CN 2004-10087985	2004 1026
JP 2005158715	A2	20050616	JP 2004-311355	2004 1026
PRIORITY APPLN. INFO.:			JP 2003-366707	A 2003 1027

AB A light-emitting element is disclosed with a light-emitting layer containing a host material added with a small amount of guest material, wherein color purity can be improved as well as reduced a driving voltage. Color purity can be improved as well as reduced a driving voltage especially in a light-emitting element added with a red light-emitting material as a guest material. A light-emitting layer is disclosed that includes a first host material, which is an organic compound having a hole transporting property; a second host



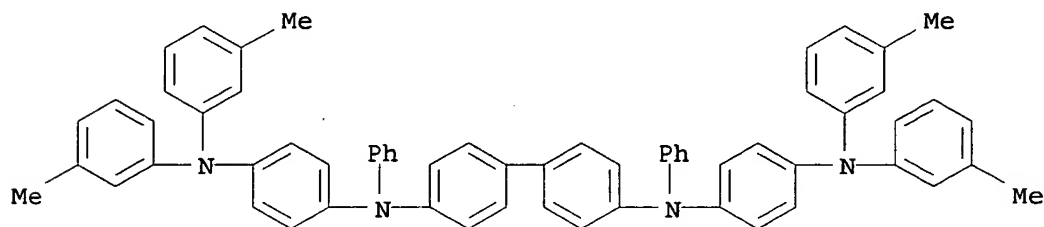
material, which is an organic compound having a larger dipole moment than that of the first host material; and a guest material having an electron-withdrawing group.

IT 199121-98-7

(light-emitting element, light-emitting device using the light-emitting element, and elec. appliance using the light-emitting device)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H01J001-62

INCL 313504000

CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT 147-14-8, Copper phthalocyanine 2085-33-8, Alq3 7429-90-5, Aluminum, properties 7789-75-5, Calcium difluoride, properties 70503-00-3 123847-85-8,  $\alpha$ -NPD 146162-54-1, Balq 199121-98-7

(light-emitting element, light-emitting device using the light-emitting element, and elec. appliance using the light-emitting device)

L25 ANSWER 17 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:300773 HCAPLUS

DOCUMENT NUMBER: 142:381889

TITLE: Light-emitting devices with extended lifetimes employing a mixed layer of semiconductor oxide and hole-transporting material, such as an aromatic amine, and method for manufacturing the light-emitting devices

INVENTOR(S): Ikeda, Hisao; Sakata, Junichiro

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005031798	A2	20050407	WO 2004-JP14412	2004

0924

WO 2005031798 A3 20050526  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
 MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
 PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
 TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH,  
 CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU,  
 MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,  
 CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

JP 3748110 B1 20060222 JP 2004-276909

2004  
0924

JP 2006114521 A2 20060427  
 JP 2006114477 A2 20060427 JP 2005-167991

2005  
0608

PRIORITY APPLN. INFO.: JP 2003-336295 A  
 2003  
0926

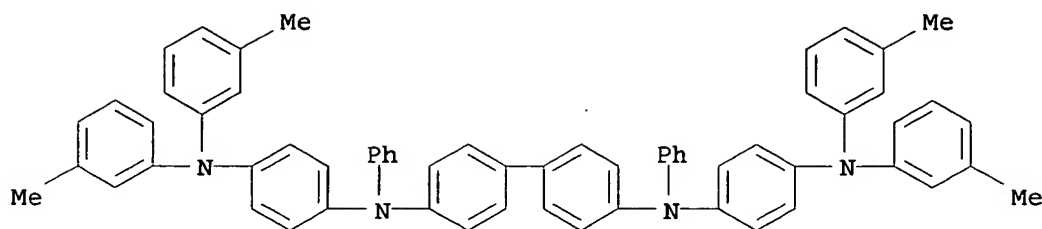
JP 2004-267426 A  
 2004  
0914

JP 2004-276909 A3  
 2004  
0924

AB A light-emitting element is disclosed that can drive at a low driving voltage and that has a longer lifetime than the conventional light-emitting element, and which comprises a plurality of layers between a pair of electrodes; and at least one layer among the plurality of layers contains one compound selected from the group consisting of oxide semiconductor and a metal oxide, and a compound having high hole transportation properties. The lifetime of the light-emitting element can be extended because such light-emitting element can suppress the crystallization of a layer containing one compound selected from the group consisting of oxide semiconductor and a metal oxide, and a compound having high hole transportation properties. Methods for fabricating of the light-emitting devices by co-evaporation are also discussed as are display devices employing the light-emitting device.

IT 199121-98-7  
 (light-emitting devices with extended lifetimes employing mixed layer of semiconductor oxide and hole-transporting material and method for manufacturing light-emitting devices)

RN 199121-98-7 HCAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H01L  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 IT 1313-27-5, Molybdenum oxide (MoO<sub>3</sub>), properties 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylaminobiphenyl 199121-98-7 (light-emitting devices with extended lifetimes employing mixed layer of semiconductor oxide and hole-transporting material and method for manufacturing light-emitting devices)

L25 ANSWER 18 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:14398 HCAPLUS

DOCUMENT NUMBER: 142:102856

TITLE: White-emitting compounds, process for the production thereof, and white-emitting devices

INVENTOR(S): Nakaya, Tadao; Ikeda, Atsushi; Sato, Mitsukura; Saikawa, Tomoyuki

PATENT ASSIGNEE(S): Hirose Engineering Co., Ltd., Japan

SOURCE: PCT Int. Appl., 121 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005000847	A1	20050106	WO 2004-JP8871	2004 0624
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2005035965	A2	20050210	JP 2003-298589	2003 0822
EP 1650208	A1	20060426	EP 2004-746340	

2004  
0624R: DE, FR, GB  
CN 1802374

A

20060712

CN 2004-80015138

2004  
0624

US 2006152143

A1

20060713

US 2005-562933

2005  
1230

PRIORITY APPLN. INFO.:

JP 2003-188972

A

2003  
0630

JP 2003-298589

A

2003  
0822

WO 2004-JP8871

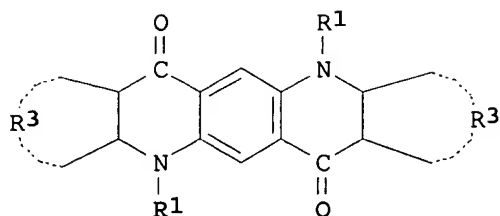
W

2004  
0624

OTHER SOURCE(S):

MARPAT 142:102856

GI



I

AB The invention provides white-emitting compds. which are novel substances capable of **emitting white light** in spite of their being single compds., a process by which such novel white-emitting compds. can be easily produced; and white-emitting devices containing the single white-emitting compds. The white-emitting compds. are characterized by being I wherein R1 is H, C1-10 alkyl, or specific aryl with the proviso that the case wherein both R1's are H is excluded, and R3 is the residue derived from (un)substituted benzene, naphthalene, anthracene and pyrene.

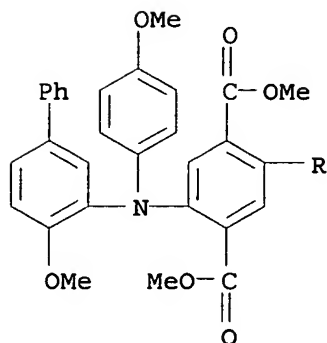
IT 817204-74-3P

(white-emitting compds. for electroluminescent device)

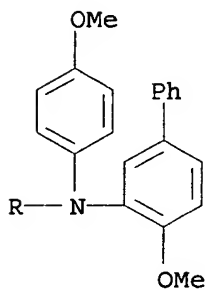
RN 817204-74-3 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, 2,5-bis[(4-methoxy[1,1'-biphenyl]-3-yl)(4-methoxyphenyl)amino]-, dimethyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07D471-04  
ICS H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 27  
IT Electroluminescent devices  
Luminescent substances  
(white-emitting compds. for electroluminescent device)  
IT 103164-74-5P 736992-37-3P 736992-38-4P 736992-42-0P  
736992-44-2P 817204-60-7P 817204-61-8P 817204-62-9P  
817204-64-1P 817204-65-2P 817204-67-4P 817204-68-5P  
817204-69-6P 817204-71-0P 817204-72-1P 817204-74-3P  
817204-76-5P 817204-77-6P 817204-78-7P  
(white-emitting compds. for electroluminescent device)  
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 19 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:1059414 HCAPLUS  
DOCUMENT NUMBER: 142:39562  
TITLE: Manufacture of solution-processable  
semiconductive polymers with improved hole  
transporting properties and their use  
INVENTOR(S): Wallace, Paul  
PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H.,  
Germany  
SOURCE: PCT Int. Appl., 25 pp.

DOCUMENT TYPE: CODEN: PIXXD2  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: 1 English  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004106409	A1	20041209	WO 2004-EP5818	2004 0528
WO 2004106409	C1	20060223		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1633801	A1	20060315	EP 2004-739446	2004 0528
CN 1768093	A	20060503	CN 2004-80008649	2004 0528
PRIORITY APPLN. INFO.:				2003 0530
EP 2003-12409				A
WO 2004-EP5818				W
				2004 0528

AB The semiconductive polymers are useful for thin film electronic and optical devices, such as organic light emitting diodes (OLED) and photovoltaic devices, e.g. solar cells and photo detectors. The semiconductive polymers can be obtained by the Yamamoto or Suzuki polymerization method where increase of the number of nitrogen atoms in the backbone of repeat unit of a semiconducting polymer improves its hole transporting capability. Appropriate selection of the polymerizable group of a monomer of a repeat unit enables the monomer to be polymerized by the Yamamoto or Suzuki polymerization which afford greater control over regioregularity of polymers as compared to prior art polymers.

IT 807374-75-0P

(manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)

RN 807374-75-0 HCAPLUS

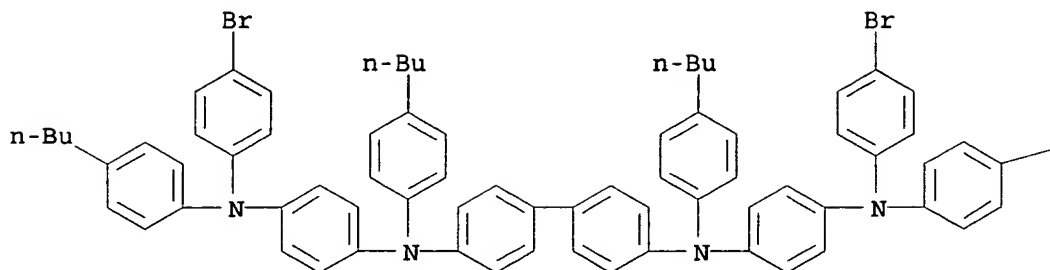
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N,N'-bis(4-butylphenyl)-, polymer with 2,2'-[2',3',6',7'-tetrakis(3-methylbutoxy)-9,9'-spirobi[9H-fluorene]-2,7-diyl]bis[1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

CRN 807374-74-9

CMF C76 H76 Br2 N4

PAGE 1-A



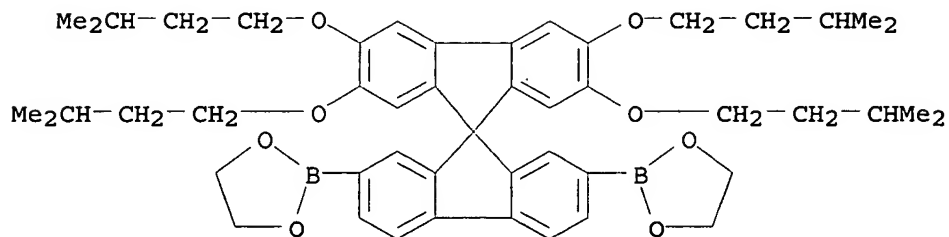
PAGE 1-B

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CM 2

CRN 807374-60-3

CMF C49 H62 B2 O8



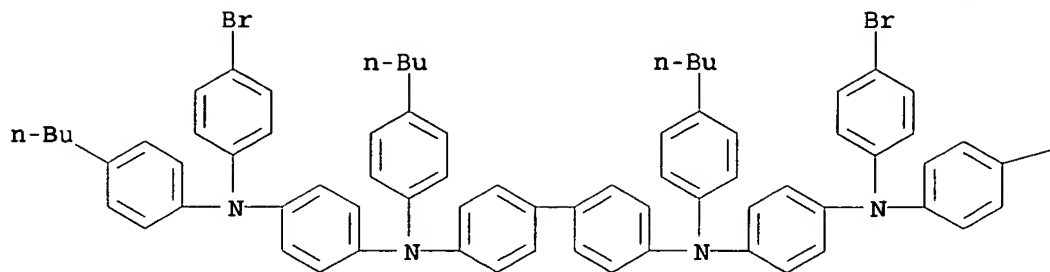
IT 807374-74-9P

(monomer; manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)

RN 807374-74-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N,N'-bis(4-butylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

— Bu-n

IC ICM C08G073-00  
 ICS C08G061-00; C08G061-12; H01L051-00; H01L051-30  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 52, 73, 76  
 IT 807374-47-6P 807374-61-4P **807374-75-0P**  
 (manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)  
 IT 807374-46-5P **807374-74-9P** 807374-98-7P  
 (monomer; manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)  
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 20 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:842710 HCAPLUS  
 DOCUMENT NUMBER: 141:340136  
 TITLE: White-emitting organic electroluminescent device and display and illumination assembled with the same  
 INVENTOR(S): Kinoshita, Motoki; Yamada, Taketoshi; Kita, Hiroshi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004288379	A2	20041014	JP 2003-75500	2003 0319

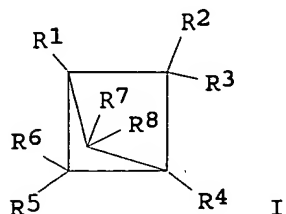


PRIORITY APPLN. INFO.:

JP 2003-75500

2003  
0319OTHER SOURCE(S):  
GI

MARPAT 141:340136



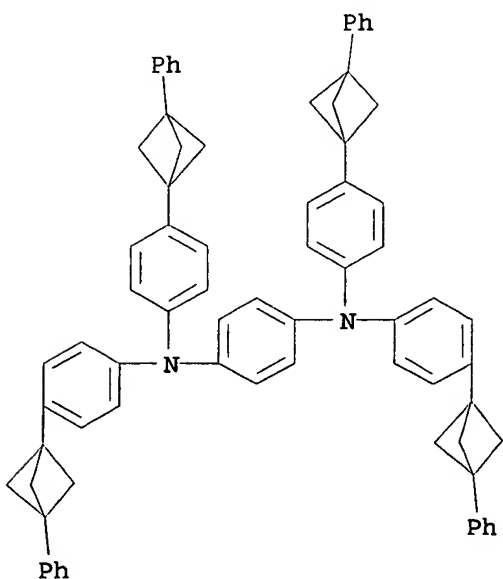
AB The organic EL device contains a light-emitting layer containing host compds., phosphorescent compds., and dopant compds., wherein any of the device-constituting layer contains compds. containing bicyclo[1.1.1]pentane skeleton, preferably, a compound represented by the general formula I (R1-R8 = H, alkyl, aryl, alkyloxy, aryloxy, alkylthio, arylthio, amino, alkylamino, arylamino, heterocycle, silyl), preferably, as the host compds. of the light-emitting layer or in a layer adjacent to the light-emitting layer. Preferably, the phosphorescent compds. comprise Ir compds., Os compds., or Pt compds.

IT 773148-52-0

(white-emitting organic EL device involving layers containing bicyclo[1.1.1]pentane compds. for display and illumination)

RN 773148-52-0 HCAPLUS

CN 1,4-Benzenediamine, N,N,N',N'-tetrakis[4-(3-phenylbicyclo[1.1.1]pent-1-yl)phenyl]- (9CI) (CA INDEX NAME).



IC ICM H05B033-14  
 ICS C07C211-57; C07C211-60; C07F005-06; C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

IT 2085-33-8 4733-39-5 58328-31-7 123847-85-8  
 773148-52-0 773148-53-1 773148-54-2 773148-55-3  
 773148-56-4 773148-57-5 773148-58-6 773148-59-7  
 773148-60-0 773148-61-1 773148-62-2 773148-63-3  
 773148-64-4 773148-65-5 773148-66-6

(white-emitting organic EL device involving layers containing bicyclo[1.1.1]pentane compds. for display and illumination)

L25 ANSWER 21 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:801715 HCAPLUS

DOCUMENT NUMBER: 141:304040

TITLE: Organic EL device with high emission efficiency and long service life, its manufacture, and organic EL panel assembled with same

INVENTOR(S): Koshiishi, Akira; Nada, Naoshi; Tomioka, Satoshi

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004273163	A2	20040930	JP 2003-59013	

2003  
0305

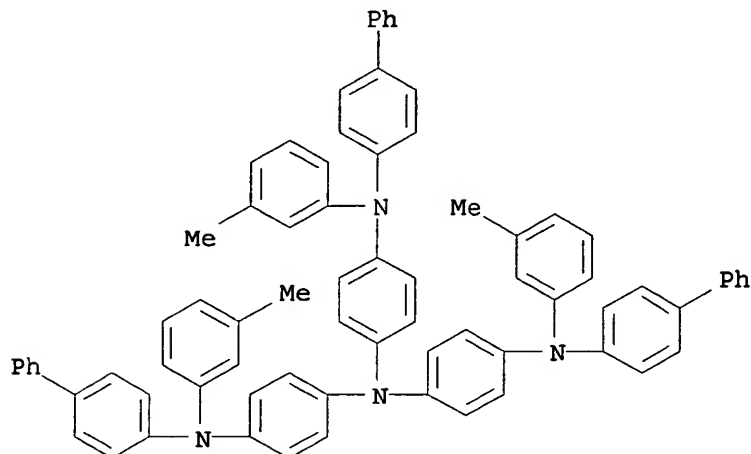
PRIORITY APPLN. INFO.: JP 2003-59013

2003  
0305

AB The organic EL device consists of  $\geq 1$  layers of organic layers involving light-emitting layers (LEL) between a pair of electrode layers,  $\geq 1$  of which are transparent electrodes, wherein an electron transfer-controlling layer (ETCL) which restricts the flow of electrons to LEL, preferably comprising  $\alpha$ -NPD, TPD, m-TPD, 1-TNATA, p-PMTDATA, TFATA, TCATA, p-DPA-TDAB, MTDAPB, p-BPD, PFFA or FFD, is provided between the electrode layers, hence only electrons which contribute to light emission are injected to LEL from ETCL, thereby improving emission efficiency, suppressing elec. power consumption, and achieving long service life. Preferably, an electron-transporting layer (ETL) is formed between the electrode layer as a cathode and LEL, ETCL is formed between the ETL and the LEL, and the energy level of LUMO of ETCL is lower than that of ETL. The organic EL panel contains a plurality of the organic EL devices arranged on a substrate.

IT 281678-63-5, p-PMTDATA  
 (p-PMTDATA, electron transfer-controlling layer; manufacture of organic EL device with high emission efficiency for organic EL panel)

RN 281678-63-5 HCAPLUS  
 CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-[[1,1'-biphenyl]-4-yl(3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)-(9CI) (CA INDEX NAME)



IC ICM H05B033-22  
 ICS H05B033-10; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT 281678-63-5, p-PMTDATA  
 (p-PMTDATA, electron transfer-controlling layer; manufacture of organic EL device with high emission efficiency for organic EL panel)

L25 ANSWER 22 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:606432 HCAPLUS  
 DOCUMENT NUMBER: 141:164537  
 TITLE: Aromatic amine derivative and organic electroluminescence element  
 INVENTOR(S): Kawamura, Hisayuki  
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 59 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004063142	A1	20040729	WO 2004-JP119	2004 0109
JP 2004262761	A2	20040924	JP 2003-7762	2003

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA

EP 1584614 A1 20051012 EP 2004-701092 0116  
 2004  
 0109  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
 EE, HU, SK  
 CN 1759094 A 20060412 CN 2004-80006742 2004  
 0109  
 US 2006134458 A1 20060622 US 2005-542105 2005  
 0713  
 PRIORITY APPLN. INFO.: JP 2003-7762 A 2003  
 0116  
 WO 2004-JP119 W 2004  
 0109

OTHER SOURCE(S): MARPAT 141:164537

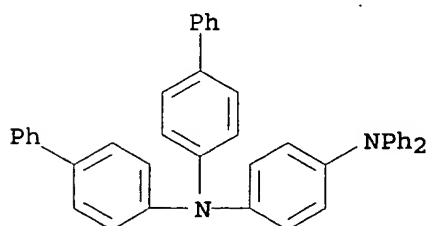
AB The invention relates to a novel aromatic amine derivative having an asym. structure; and an organic electroluminescence element having a cathode, an anode, and one or plural organic thin film layers at least containing a luminescent layer, sandwiched between the electrodes, wherein at least 1 of said organic thin film layers comprises the above aromatic amine derivative as itself or a component of a mixture. The novel aromatic amine derivative has a mol. structure making the compound less susceptible to crystallization, which results in the improvement of the yield in the production of an organic EL element.

IT 728039-62-1P

(aromatic amine derivative for organic electroluminescence device)

RN 728039-62-1 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis([1,1'-biphenyl]-4-yl)-N',N'-diphenyl-  
 (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C211-58; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25

IT 212385-78-9P 212385-80-3P 259139-39-4P 728039-62-1P  
 728039-65-4P 728039-67-6P

(aromatic amine derivative for organic electroluminescence device)

L25 ANSWER 23 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:458829 HCAPLUS

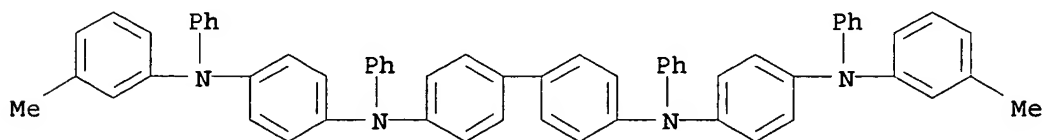
DOCUMENT NUMBER: 141:173760  
TITLE: A correlation between electrochemical properties and geometrical structure of some triarylamines used as hole transporting materials in organic electroluminescent devices  
AUTHOR(S): Casalbore-Miceli, G.; Esposti, A. Degli; Fattori, V.; Marconi, G.; Sabatini, C.  
CORPORATE SOURCE: CNR, Istituto per la Sintesi Organica e la Fotoreattività (ISOF), Bologna, I-40129, Italy  
SOURCE: Physical Chemistry Chemical Physics (2004), 6(12), 3092-3096  
CODEN: PPCPFQ; ISSN: 1463-9076  
PUBLISHER: Royal Society of Chemistry  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Two new compds. with four tertiary arylamine moieties connected in a fully para-conjugated system have been synthesized in order to obtain new mols. having low ionization potentials, as required for hole transporting materials in organic light emitting diodes (OLEDs). Their electrochem. properties have been measured and compared to seven different com. triarylamines tested in the same exptl. conditions. Using the AM1 geometries and the statistical average of orbital potential method (SAOP), the redox potentials of the mols. have been estimated and found to be in good agreement with the exptl. data. An evident correlation between the mol. geometry and the electrochem. potential of the first oxidation exists and shows that, for equal number of para-conjugated triarylamine moieties, the starburst configuration is more efficient than the linear one in lowering the oxidation potential and that the amine moieties of the inner sphere play a more important role than those of the outer sphere. Besides, amine moieties connected by a biphenyl bridge show generally higher ionization potentials than those connected via one phenylene.

IT 260550-65-0P  
(correlation between electrochem. properties and geometrical structure of triarylamines used as hole transporting materials in organic electroluminescent devices)

RN 260550-65-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
Section cross-reference(s): 73

IT 208830-43-7P 260550-65-0P  
(correlation between electrochem. properties and geometrical structure of triarylamines used as hole transporting materials in organic electroluminescent devices)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE

## IN THE RE FORMAT

L25 ANSWER 24 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118662 HCAPLUS

DOCUMENT NUMBER: 140:172301

TITLE: Organic electroluminescent elements with improved brightness and durability and color displays using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 57 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004047443	A2	20040212	JP 2003-134267	2003 0513
PRIORITY APPLN. INFO.:			JP 2002-140103	A 2002 0515

OTHER SOURCE(S): MARPAT 140:172301

AB The elements contain, R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>N [R<sub>1</sub>-3 = substituted p-A-Ph; A = (un)substituted aromatic hydrocarbyl], preferably in hole-transport layers. The elements may have light-emitting layers containing phosphorescent complexes of Group VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent compds. having maximum fluorescence wavelength longer than maximum emission wavelength of the complexes.

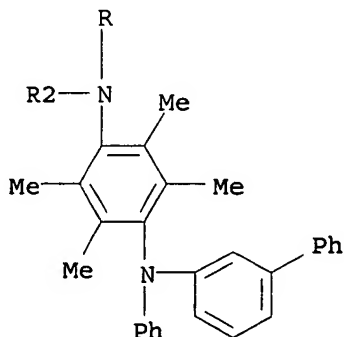
IT 655240-51-0 655240-54-3

(hole-transport layer; organic EL elements containing triphenylamine-based compds. with improved brightness and durability for displays)

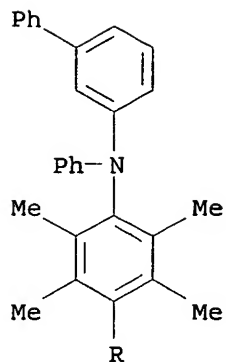
RN 655240-51-0 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)-2,3,5,6-tetramethylphenyl]-2,3,5,6-tetramethyl-N-phenyl- (9CI) (CA INDEX NAME)

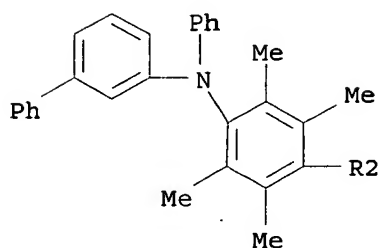
PAGE 1-A



PAGE 2-A

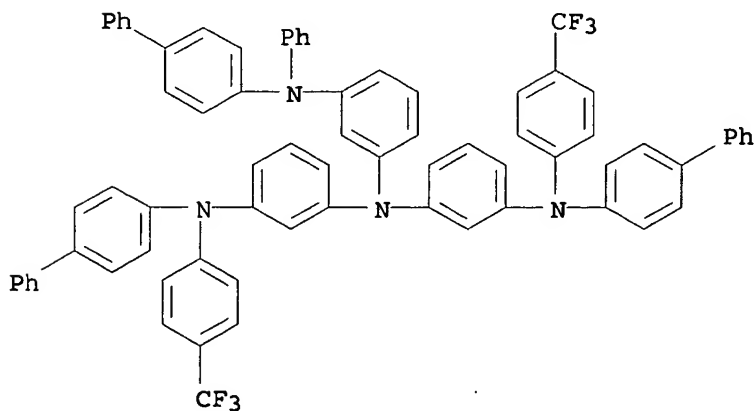


PAGE 3-A



RN 655240-54-3 HCAPLUS

CN 1,3-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-[3-([1,1'-biphenyl]-4-ylphenylamino)phenyl]-N'-[1-([1,1'-biphenyl]-4-yl[4-(trifluoromethyl)phenyl]amino)phenyl]-N-[4-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and

## Other Reprographic Processes)

Section cross-reference(s): 73

IT 405171-49-5 655240-48-5 655240-49-6 655240-50-9  
 655240-51-0 655240-52-1 655240-53-2  
 655240-54-3 655240-55-4 655240-56-5 655240-57-6  
 (hole-transport layer; organic EL elements containing  
 triphenylamine-based compds. with improved brightness and  
 durability for displays)

L25 ANSWER 25 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118661 HCAPLUS

DOCUMENT NUMBER: 140:172300

TITLE: Organic electroluminescent elements with  
 improved brightness and durability and  
 displays using them

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Oshiyama,  
 Tomohiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004047442	A2	20040212	JP 2003-132872	2003 0512
PRIORITY APPLN. INFO.:			JP 2002-138307	A 2002 0514

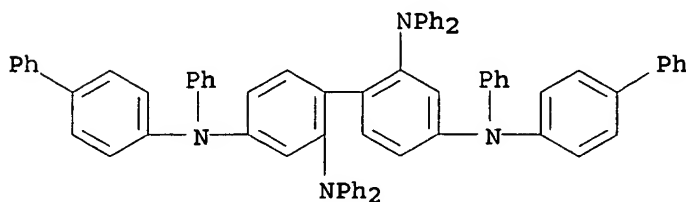
OTHER SOURCE(S): MARPAT 140:172300

AB The elements contain R1R2NQ1Q2NR3R4 [R1-4 = (un)substituted Ph;  
 Q1,2 = (un)substituted p-phenylene; Q1 = Q2 ≠ p-phenylene],  
 preferably in hole-transport layers. The elements may have  
 light-emitting layers containing phosphorescent complexes of Group  
 VIII metals (Os, Ir, or Pt, preferably) and ≥1 fluorescent  
 compds. having maximum fluorescence wavelength longer than maximum  
 emission wavelength of the complexes.

IT 655236-09-2  
 (hole-transport or light-emitting layer;  
 organic EL elements containing tetraphenylbenzidine-based  
 compds. with improved brightness and durability for displays)

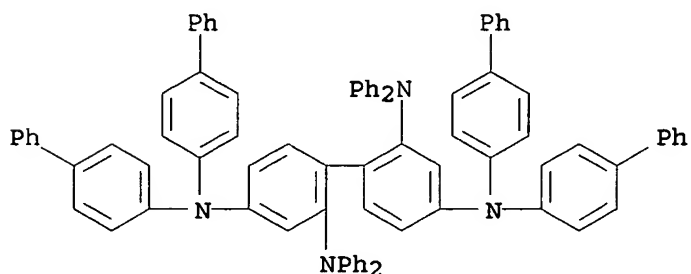
RN 655236-09-2 HCAPLUS

CN [1,1'-Biphenyl]-2,2',4,4'-tetramine, N4,N4'-bis([1,1'-biphenyl]-4-  
 yl)-N2,N2,N2',N2',N4,N4'-hexaphenyl- (9CI) (CA INDEX NAME)





IT 655236-17-2  
 (light-emitting layer; organic EL  
 elements containing tetraphenylbenzidine-based compds. with  
 improved brightness and durability for displays)  
 RN 655236-17-2 HCAPLUS  
 CN [1,1'-Biphenyl]-2,2',4,4'-tetramine, N4,N4,N4',N4'-tetrakis([1,1'-  
 biphenyl]-4-yl)-N2,N2,N2',N2'-tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
 ICS C09K011-06; H05B033-14  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73  
 IT 453590-46-0 478262-76-9 478370-42-2 655236-06-9  
 655236-09-2 655236-13-8  
 (hole-transport or light-emitting layer;  
 organic EL elements containing tetraphenylbenzidine-based  
 compds. with improved brightness and durability for displays)  
 IT 58328-31-7 453590-45-9 478262-77-0 478370-41-1 655236-14-9  
 655236-15-0 655236-16-1 655236-17-2  
 (light-emitting layer; organic EL  
 elements containing tetraphenylbenzidine-based compds. with  
 improved brightness and durability for displays)

L25 ANSWER 26 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:18631 HCAPLUS  
 DOCUMENT NUMBER: 140:101743  
 TITLE: Light emitting device  
 INVENTOR(S): Yamazaki, Shunpei; Arai, Yasuyuki  
 PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd.,  
 Japan  
 SOURCE: U.S. Pat. Appl. Publ., 27 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004004214	A1	20040108	US 2003-426971	2003 0501
JP 2004047447	A2	20040212	JP 2003-137219	2003

PRIORITY APPLN. INFO.:

JP 2002-140033

A

0515

2002

0515

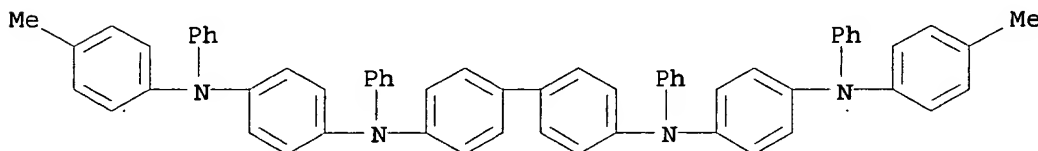
AB A light emitting device is described comprising light emitting elements formed between a lamination layer and an inorg. compound layer that transmits visual light, where the lamination layer is constructed of one unit or two or more units, and each unit is a laminated structure of a metal layer (e.g., Al, Al alloy) and an organic compound layer, wherein the lamination layer is formed on the primary surface of the plastic substrate (e.g., polyether sulfone, polyallylate, polyimide, polyamide, acrylic resin, epoxy resin, polyethylene terephthalate, polyethylenenaphthalate and polycarbonate), so that a flexible substrate structure can be obtained while preventing the substrate from deterioration with the transmission of oxygen or moisture content.

IT 203007-32-3

(hole injection layer; light emitting device having laminated structure on plastic substrate)

RN 203007-32-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-methylphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H01L035-24

INCL 257040000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 38, 76

IT 203007-32-3

(hole injection layer; light emitting device having laminated structure on plastic substrate)

L25 ANSWER 27 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:868360 HCAPLUS

DOCUMENT NUMBER: 139:371610

TITLE: Organic electroluminescent materials and devices having high luminescent efficiency and color purity

INVENTOR(S): Funabashi, Masakazu; Iwakuma, Toshihiro; Hosokawa, Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

JP 2003313547

A2

20031106

JP 2002-116935

2002  
0419

PRIORITY APPLN. INFO.:

JP 2002-116935

2002  
0419

OTHER SOURCE(S): MARPAT 139:371610

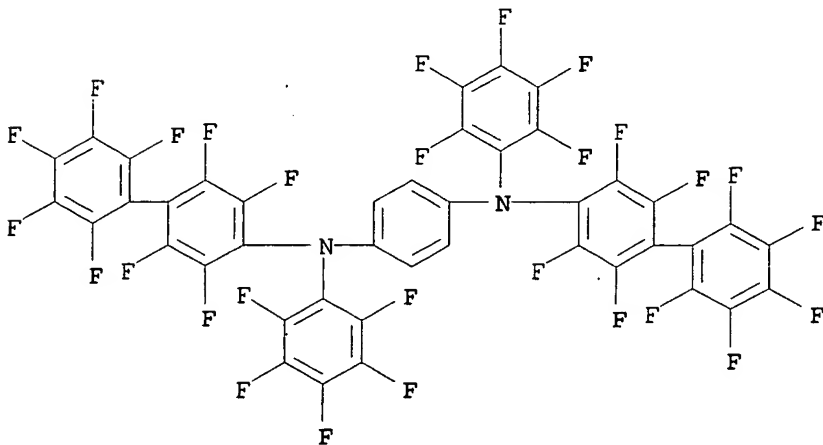
AB The materials are Ar1(NAr4Ar6)<sub>n</sub>(NAr5Ar7)<sub>m</sub>NAr2Ar3 [n= 1-3; m = 0-2; Ar1-Ar3, Ar6, Ar7 = 1,2-, 1,3-, or 1,4-(perfluoro)phenyl (structures given); ≥1 of Ar1-Ar3, Ar6, Ar7 = perfluorophenyl; Ar4, Ar5 = 1,2-, 1,3-, or 1,4-(perfluoro)phenylene (structures given); Ar4 and/or Ar5 = perfluorophenylene]. The devices, preferably blue-emitting, contain the materials as host materials in emitter layers and are useful as light sources for elec. apparatus

IT 620607-81-0P 620607-84-3P

(fluorophenylamines as host materials in emitter layers in organic electroluminescent devices)

RN 620607-81-0 HCAPLUS

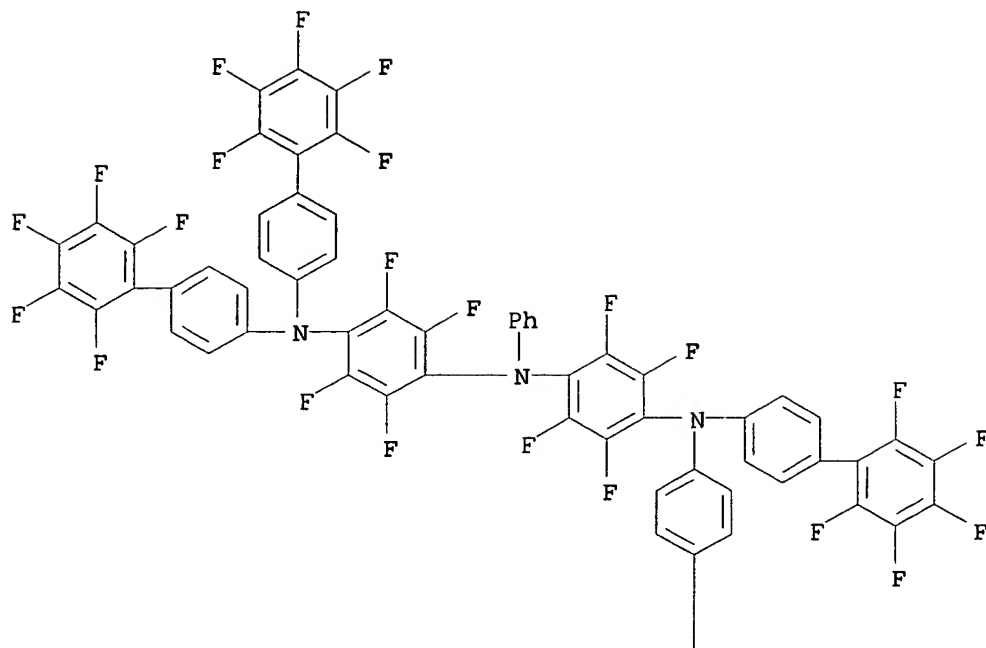
CN 1,4-Benzenediamine, N,N'-bis(2,2',3,3',4',5,5',6,6'-nonafluoro[1,1'-biphenyl]-4-yl)-N,N'-bis(pentafluorophenyl)- (9CI)  
(CA INDEX NAME)



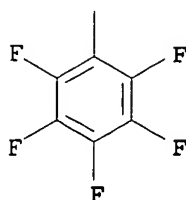
RN 620607-84-3 HCAPLUS

CN 1,4-Benzenediamine, N-[4-[bis(2',3',4',5',6'-pentafluoro[1,1'-biphenyl]-4-yl)amino]-2,3,5,6-tetrafluorophenyl]-2,3,5,6-tetrafluoro-N',N'-bis(2',3',4',5',6'-pentafluoro[1,1'-biphenyl]-4-yl)-N-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C09K011-06  
 ICS C07C211-56; H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT **Luminescent** substances  
 (electroluminescent; fluorophenylamines as host materials in emitter layers in organic electroluminescent devices)  
 IT 620607-81-0P 620607-84-3P 620607-86-5P  
 620607-87-6P  
 (fluorophenylamines as host materials in emitter layers in organic electroluminescent devices)

L25 ANSWER 28 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:673851 HCAPLUS

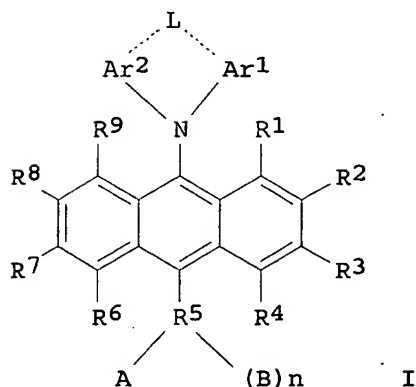
DOCUMENT NUMBER: 139:204846

TITLE: Anthracene compounds, their organic EL device materials, and their EL devices having high emission efficiency, long service life, and good heat resistance

INVENTOR(S): Hosokawa, Chishio; Funabashi, Masakazu; Ikeda, Shuji; Yamamoto, Hiroshi  
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238534	A2	20030827	JP 2002-45705	2002 0222
PRIORITY APPLN. INFO.:			JP 2002-45705	2002 0222

OTHER SOURCE(S): MARPAT 139:204846  
 GI



AB The anthracene compds. are represented by a general formula of I [R1-R4, R6-R9 = H, halo, OH, NO<sub>2</sub>, CN, amino, C1-30 alkyl, C4-40 alkenyl, CO<sub>2</sub>H, etc.; R5 = divalent or trivalent C5-40 aromatic, divalent or trivalent C2-40 aromatic heterocyclic; R1-R9 may be bonded to neighboring group and form ring; A, B = C6-40 aryl, aromatic C2-40 heterocyclic; when R5 = C10-40 aromatic or aromatic C5-40 heterocyclic, A may be H; Ar1, Ar2 = C6-40 aryl, aromatic C2-40 heterocyclic, may be bonded to each other via linkage group L; L = (CR10R11)<sub>m</sub>, (SiR10R11)<sub>m</sub>, NR12<sub>m</sub>, vinylene, C6-40 arylene; R10-R12 = H, halo, C1-40 alkyl, C5-40 cycloalkyl, C5-40 aromatic hydrocarbyl, aromatic C2-40 heterocyclic, C7-40 aralkyl; m = 1, 2, 3; n = 0, 1]. The organic EL device contains, between anodes and cathodes, ≥1 organic thin-film layers involving a luminescent layer and containing I in ≥1 of the layers. Preferably, the organic thin-film layers consist of a luminescent layer, an electron-transporting layer, and a hole-transporting layer and at least the luminescent layer contains I. Preferably, the

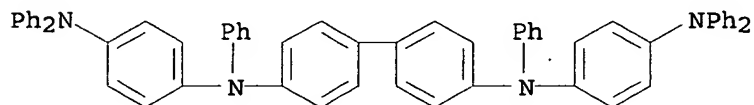
luminescent layer further contains arylamine compds. which may be selected from those represented by a general formula of  $\text{Ar}_5(\text{NAr}_6\text{Ar}_7)_p$  ( $\text{Ar}_5 = \text{C}_6\text{-40 aromatic}$ ;  $\text{Ar}_6, \text{Ar}_7 = \text{H, C}_6\text{-40 aromatic}$ ;  $p = 1\text{-6 integer}$ ) or  $\text{Ar}_8(\text{NAr}_9)_q\text{Ar}_{10}\text{rNAr}_{11}\text{Ar}_{12}\text{s}(\text{NAr}_{13})\text{tAr}_{14}$  ( $\text{Ar}_8, \text{Ar}_{14} = \text{C}_6\text{-40 aromatic}$ ;  $\text{Ar}_9\text{-Ar}_{13} = \text{H, C}_6\text{-40 aromatic}$ ;  $q, r, s, t = 0, 1$ ). The electron-transporting layer may contain inorg. compds., preferably selected from dielects., semiconductors, or fine-crystalline or amorphous dielec. thin films. The dielects. may comprise  $\geq 1$  compds. selected from alkali metal chalcogenides, alkaline earth metal chalcogenides, alkali metal halides, and alkaline earth metal halides. The semiconductors may comprise  $\geq 1$  oxides, nitrides, or oxynitrides of  $\geq 1$  elements selected from Ba, Ca, Sr, Yb, Al, Ga, In, Li, Na, Cd, Mg, Si, Ta, Sb, and Zn. The electron-transporting layer may contain reducing dopants, preferably,  $\geq 1$  alkali metals selected from Na, K, Rb, and Cs and/or  $\geq 1$  alkaline earth metals selected from Ca, r, and/or Ba. In another alternative, the organic thin-film layers consist of an electron-transporting layer, and a hole-transporting layer and at least one of these layers contain I.

IT 209980-53-0

(hole-injection layer; anthracene compds. for organic EL device having high emission efficiency, long service life, and good heat resistance)

RN 209980-53-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-(diphenylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07D209-86

ICS C07D223-22; C07D241-46; C07D471-04; C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25

IT 209980-53-0

(hole-injection layer; anthracene compds. for organic EL device having high emission efficiency, long service life, and good heat resistance)

L25 ANSWER 29 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:673842 HCAPLUS

DOCUMENT NUMBER: 139:204845

TITLE: Aromatic oligoamine derivatives, their hole injection-transporting materials, and their organic EL devices with low driving voltage

INVENTOR(S): Kawamura, Hisayuki

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238501	A2	20030827	JP 2002-40102	2002 0218

PRIORITY APPLN. INFO.:

JP 2002-40102

2002  
0218

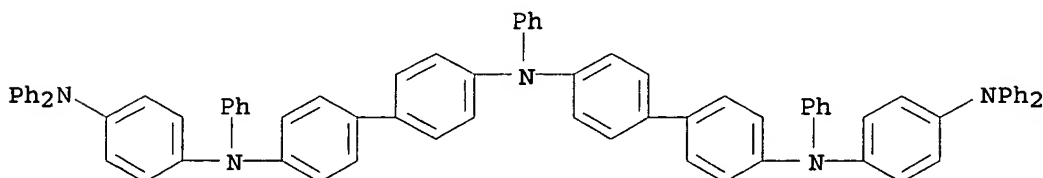
AB The organic EL device contain hole injection-transporting materials of aromatic oligoamine derivs. bearing  $\geq 5$  N atom. in the mols., containing  $\geq 2$  of linkage structures for hole transfer, represented by Ar1XAr2 (Ar1, Ar2 = arylene with nucleus C number 6-30, aromatic heterocyclic group nucleus atom number 5-30; X = single bond, arylene with nucleus C number 6-30, aromatic heterocyclic group with nucleus atom number 5-30, methylene, 1-cyclohexyl, fluorenylene, ether, thioether, vinylene, C.tplbond.C; Ar1, Ar2, X may have  $\geq 1$  substituents), and containing  $\geq 2$  linkages for lowering ionization potential, represented by -p-phenylene-substituted with Y (Y = Y C1-12 alkyl, C1-12 alkoxy, aryl with nucleus C number 6-30, aromatic heterocyclic group with nucleus atom number 5-30, aryloxy with nucleus C number 6-30; n = 0-4 integer).

IT 585540-56-3P 585540-58-5P 585540-60-9P

(aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)

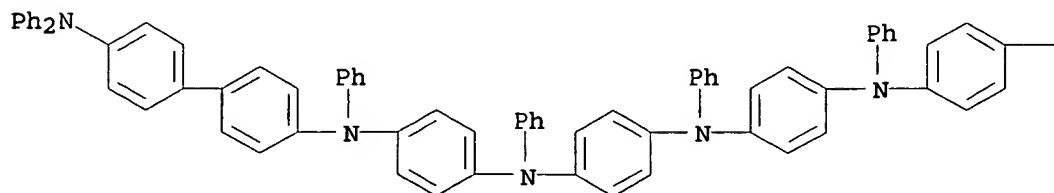
RN 585540-56-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-[4-(diphenylamino)phenyl]-N'-[4'-[[4-(diphenylamino)phenyl]phenylamino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



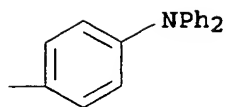
RN 585540-58-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N''-[1,4-phenylenebis[(phenylimino)-4,1-phenylene]]bis[N,N',N'-triphenyl- (9CI) (CA INDEX NAME)]



PAGE 1-A

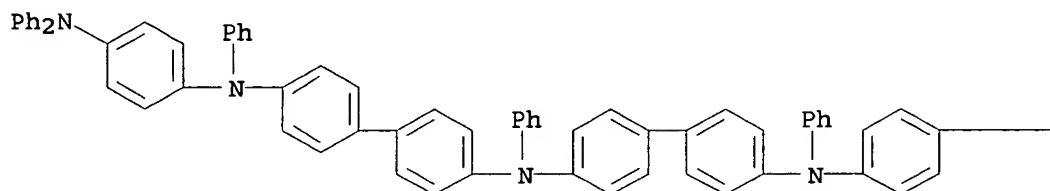
PAGE 1-B



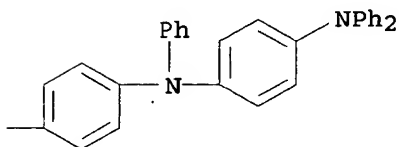
RN 585540-60-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4'-[[4-(diphenylamino)phenyl]phenylamino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- IC ICM C07C211-54  
ICS C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25
- IT Electroluminescent devices  
(aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)
- IT Amines, uses  
(aromatic, oligomer; aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)
- IT 585540-56-3P 585540-58-5P 585540-60-9P  
(aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)
- IT 1100-10-3P, 4,4'-Dinitrotriphenylamine 4117-90-2P,  
4,4'-Diaminotriphenylamine 38257-52-2P, 4-Iodotriphenylamine  
38257-56-6P 54446-36-5P 167218-38-4P 585540-48-3P  
585540-49-4P 585540-50-7P 585540-51-8P 585570-08-7P  
(aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)
- IT 103-88-8, p-Bromoacetanilide 122-39-4, Diphenylamine, reactions  
350-46-9, p-Fluoronitrobenzene 591-50-4, Iodobenzene 603-34-9,  
Triphenylamine 3001-15-8, 4,4'-Diiodobiphenyl 81090-53-1,  
4,4'-Dibromotriphenylamine  
(aromatic oligoamine derivs. for hole injection-transporting materials of organic EL devices)



L25 ANSWER 30 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:671076 HCAPLUS  
 DOCUMENT NUMBER: 139:204838  
 TITLE: Condensed aromatic compounds for red phosphors  
 and their organic electroluminescent device  
 INVENTOR(S): Iwakuma, Toshihiro; Hironaka, Yoshio; Arakane,  
 Takashi; Hosokawa, Chishio; Kusumoto, Tadashi  
 PATENT ASSIGNEE(S): Sekiyu Sangyo Kasseika Center, Japan; Idemitsu  
 Kosan Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238516	A2	20030827	JP 2002-41472	2002 0219
PRIORITY APPLN. INFO.:			JP 2002-41472	2002 0219
OTHER SOURCE(S):		MARPAT 139:204838		
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
 \*

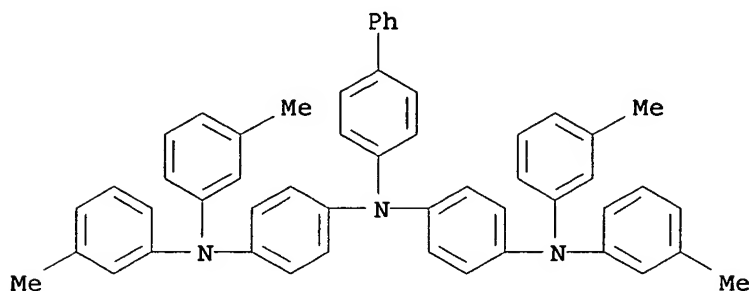
AB The condensed aromatic compds. have fluoranthene skeletons bearing amino groups and electron-withdrawing groups, represented by general formulas I-IV (R1-R14 = H, C1-30 alkoxy, C1-30 alkoxy, C6-40 aryl, C3-20 trialkoxysilyl, C4-30 alkenyl, C7-40 arylalkyl, C6-40 aryloxy, CN, perfluoroalkyl, NO2, halo, NX1X2; every formulas contain  $\geq 1$  NX1X2 and  $\geq 1$  electron-withdrawing groups as the substituents; R1-R14 may form ring structures with adjacent groups; in I, II, and V, benzene rings in the line sym. center may be replaced by naphthalene or anthracene ring; in I, R2-R3 and R5-R6, or R9-R10 and R2-R3 may form ring to give naphthalene skeletons; in IV, R5-R6 may form ring to give naphthalene skeletons; X1, X2 = H, C1-30 alkyl, C6-40 aryl, C7-40 arylalkyl, C3-40 heterocyclic group; X1 and X2 may be bonded to each other and form ring; X1, X2, and fluoranthene skeleton groups may be bonded to each other and form ring structure). The organic EL device contains organic thin-film layer containing condensed aromatic compds. bearing amino groups and electron-withdrawing groups, i.e., I, in an electron-transporting layer or a hole-transporting layer.

IT 181367-28-2  
 (condensed aromatic compds. for red phosphors for organic EL device)

RN 181367-28-2 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-[bis(3-

methylphenyl) amino]phenyl] -N',N'-bis(3-methylphenyl) - (9CI) (CA  
INDEX NAME)



IC ICM C07C255-59  
ICS C07C211-59; C07C211-61; C07C255-52; C07C255-58; C07D213-74;  
C09K011-06; H05B033-14; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 25  
IT 2085-33-8, 8-Hydroxyquinoline aluminum 123847-85-8  
181367-28-2 186412-15-7  
(condensed aromatic compds. for red phosphors for organic EL  
device)

L25 ANSWER 31 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:661197 HCAPLUS

DOCUMENT NUMBER: 139:387882

TITLE: Enhanced luminance of blue light-emitting  
polymers by blending with hole-transporting  
materials

AUTHOR(S): Suh, Min Chul; Chin, Byung Doo; Kim, Mu-Hyun;  
Kang, Tae Min; Lee, Seong Taek

CORPORATE SOURCE: Corporate R&D Center, Samsung SDI Co., Ltd,  
Gyeonggi-Do, 449-902, Taiwan

SOURCE: Advanced Materials (Weinheim, Germany) (2003),  
15(15), 1254-1258

CODEN: ADVMEW; ISSN: 0935-9648

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

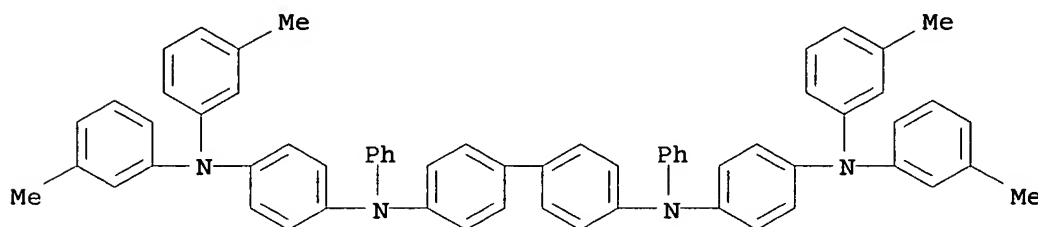
AB The laser-induced thermal imaging (LITI) process is well suited  
for patterning any type of electroluminescent spin-coatable  
materials. The relation and balance of LEP [light emitting  
polymer compns., e.g., Covion blue polymer (CB)] cohesion and  
interlayer adhesion between the LEP and HTL [hole transport layer]  
and between the LEP layer and the donor film are key issues in  
determining the quality of the patterning process. Optically and  
electronically inert polymers such as polystyrene (PS), poly(Me  
methacrylate) (PMMA), poly(acenaphthylene) (PANA), were evaluated  
in as hosts in LEP mixts. to improve LITI pattern quality.  
Amorphous HTMs [hole transporting material]s were also evaluated  
to attain a decrease in operating voltage of devices; the HTMs  
include 1,3,5-tris[N,N-bis(4-methoxyphenyl)aminophenyl]benzene  
(TDAPB), 4,4',4''-tris(N-3-methylphenyl-N-  
phenylamino)triphenylamine (MTDATA), N,N'-di[4-(N,N'-  
diphenylamino)phenyl]-N,N'-diphenylbenzidine (DNTPD), and  
1,1-bis[4-bis(4-methylphenyl)aminophenyl]cyclohexane (TAPC). The

process and materials were used to fabricate improved bright blue light-emitting patterned PLEDs.

IT 199121-98-7, N,N'-Di[4-(N,N'-diphenylamino)phenyl]-N,N'-diphenylbenzidine  
(DNTPD, hole-transporting layer; enhanced luminance of blue PLEDs by blending blue emitter with hole-transport compds. and by fabrication using laser-induced thermal imaging patterning technique)

RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36, 76

IT 199121-98-7, N,N'-Di[4-(N,N'-diphenylamino)phenyl]-N,N'-diphenylbenzidine  
(DNTPD, hole-transporting layer; enhanced luminance of blue PLEDs by blending blue emitter with hole-transport compds. and by fabrication using laser-induced thermal imaging patterning technique)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 32 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:373850 HCAPLUS

DOCUMENT NUMBER: 138:392820

TITLE: Polymer compound and polymer light-emitting device using the same

INVENTOR(S): Oguma, Jun; Tsubata, Yoshiaki; Doi, Shuji

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: Eur. Pat. Appl., 36 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

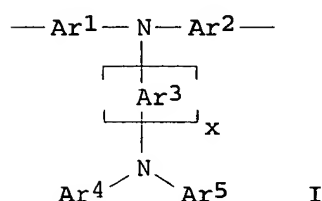
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1310539	A1	20030514	EP 2002-257717	2002 1107
EP 1310539	B1	20050316		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

SG 112858	A1	20050728	SG 2002-6657	2002 1101
US 2003165713	A1	20030904	US 2002-287655	2002 1105
US 6830832	B2	20041214		
JP 2003226744	A2	20030812	JP 2002-322413	2002 1106
PRIORITY APPLN. INFO.:			JP 2001-344482	A 2001 1109

GI

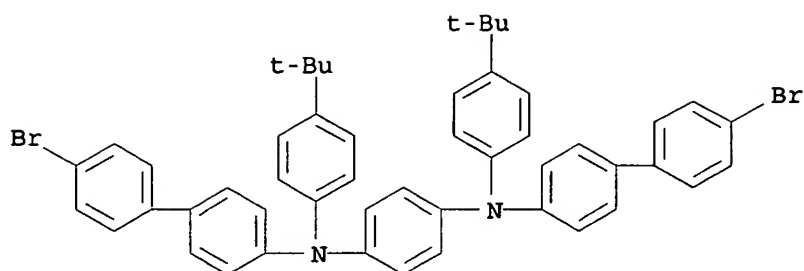


AB A polymer compound having polystyrene reduced number average mol. weight of 103-108, and comprising one or more kinds of repeating units according to  $\text{---Ar}^1\text{N}[(\text{Ar}^3)_x\text{NAr}^3\text{Ar}^4]\text{Ar}^2\text{---}$  ( $\text{Ar}^1, \text{Ar}^2$  = arylene group, or divalent heterocyclic compound group;  $\text{Ar}^3$  = arylene group, arylene vinylene group, or divalent heterocyclic compound group;  $x = 1-10$ ; wherein when  $x$  is  $\geq 2$ , a plurality of  $\text{Ar}^3$  may be the same or different;  $\text{Ar}^4, \text{Ar}^5$  = aryl group, monovalent heterocyclic compound group, or compound with repeating units of  $\text{---Ar}^6\text{---}$  wherein  $\text{Ar}^6$  = phenylene, stilbene-diyl, distilbene-diyl, fluorene-diyl, divalent condensed polycyclic aromatic, divalent monocyclic hetero-ring, divalent condensed polycyclic hetero ring, or divalent amine compound group). A polymer light-emitting device using the polymer is also described. A display apparatus comprising the polymer light-emitting device is also described. A dot-matrix display apparatus comprising the polymer light-emitting device is also described. A liquid crystal display apparatus comprising the polymer light-emitting device is also described.

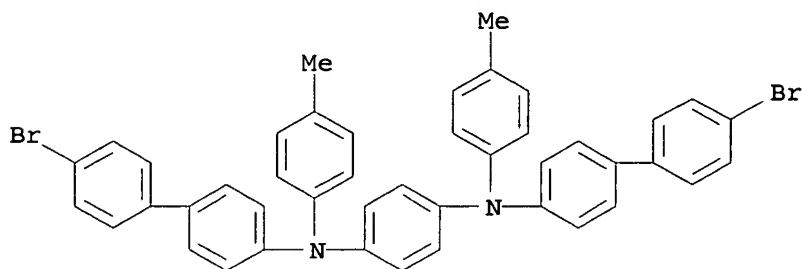
IT 525602-20-4P 525602-23-7P  
(copolymer compound and polymer light-emitting device using the same)

RN 525602-20-4 HCAPLUS

CN 1,4-Benzenediamine, N,N'-bis(4'-bromo[1,1'-biphenyl]-4-yl)-N,N'-bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 525602-23-7 HCAPLUS  
 CN 1,4-Benzenediamine, N,N'-bis(4'-bromo[1,1'-biphenyl]-4-yl)-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38, 74, 76  
 ST polymer light emitting device  
 IT Liquid crystal displays  
 Optical imaging devices  
 (copolymer compound and polymer light-emitting device using the same)  
 IT Electroluminescent devices  
 (displays, polymer; copolymer compound and polymer light-emitting device using the same)  
 IT Luminescent screens  
 (electroluminescent, polymer; copolymer compound and polymer light-emitting device using the same)  
 IT Electroluminescent devices  
 (polymer; copolymer compound and polymer light-emitting device using the same)  
 IT 444796-18-3P 525602-19-1P 525602-22-6P 525602-25-9P  
 (copolymer compound and polymer light-emitting device using the same)  
 IT 525602-17-9P 525602-18-0P 525602-20-4P 525602-23-7P  
 (copolymer compound and polymer light-emitting device using the same)  
 IT 122-39-4, Diphenylamine, reactions 4316-53-4 4316-58-9, Tris(4-bromophenyl)amine 16292-17-4, Bis(4-bromophenyl)amine 195443-34-6 198964-46-4, 2,7-Dibromo-9,9-dioctylfluorene 227003-50-1, Bis(4-butylphenyl)amine  
 (copolymer compound and polymer light-emitting device using the same)

device using the same)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 33 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:944702 HCAPLUS

DOCUMENT NUMBER: 138:46995

TITLE: Aryl benzidine derivative compound, organic  
electroluminescent material, and organic  
electroluminescent element

INVENTOR(S): Oshiyama, Tomohiro; Okubo, Yasushi; Yamada,  
Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

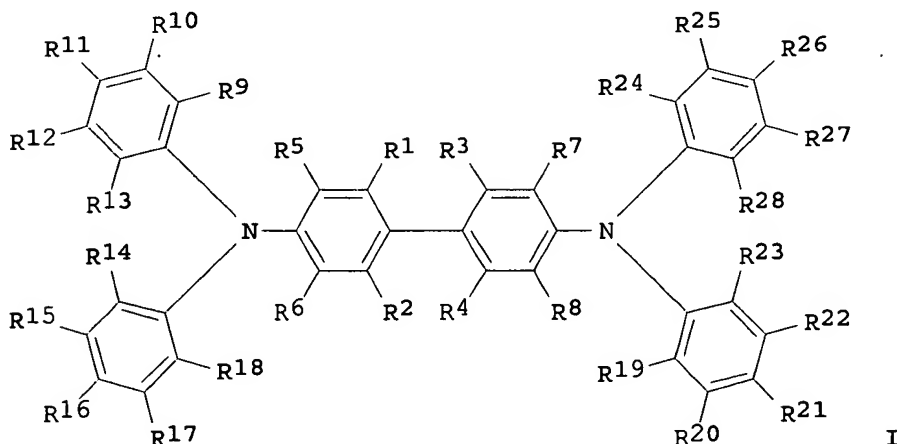
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2002356462	A2	20021213	JP 2001-291115	2001 0925
PRIORITY APPLN. INFO.:			JP 2001-100080	A 2001 0330

OTHER SOURCE(S): MARPAT 138:46995  
GI



AB The invention refers to an organic electroluminescent device comprising a novel organic luminescent material I [R1-28 = H, or substituent; at least one of R14-18 and at least one of R19-23 = (un)substituted phenyl; the sum of the steric

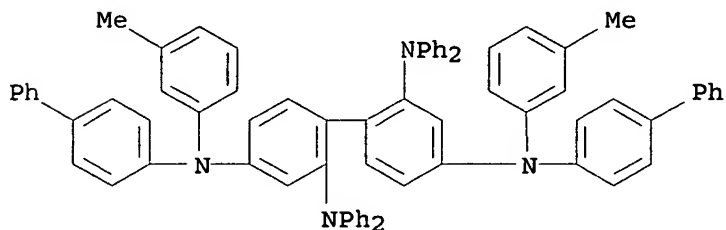
parameters of R1-4, Es = -7 to -2.5].

IT 478370-43-3P

(aryl benzidine derivative compound, organic electroluminescent material, and organic electroluminescent element)

RN 478370-43-3 HCAPLUS

CN [1,1'-Biphenyl]-2,2',4,4'-tetramine, N4,N4'-bis([1,1'-biphenyl]-4-yl)-N4,N4'-bis(3-methylphenyl)-N2,N2,N2',N2'-tetraphenyl- (9CI)  
(CA INDEX NAME)



IC ICM C07C211-54

ICS C07C211-56; C07C217-80; C07C217-92; C07C229-60; C07C233-43;  
C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 478262-76-9P 478370-39-7P 478370-42-2P 478370-43-3P  
478370-45-5P

(aryl benzidine derivative compound, organic electroluminescent material, and organic electroluminescent element)

L25 ANSWER 34 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:867322 HCAPLUS

DOCUMENT NUMBER: 137:377521

TITLE: Organic electroluminescent device with high emission efficiency and long service life, and its display device

INVENTOR(S): Matsuura, Mitsunobu; Oshiyama, Tomohiro; Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002329577	A2	20021115	JP 2001-131667	2001 0427

PRIORITY APPLN. INFO.: JP 2001-131667

2001  
0427

OTHER SOURCE(S): MARPAT 137:377521

AB The electroluminescent (EL) device has a light-emitting layer containing an organic compound with band gap 2.96-3.80 eV and mol. weight 600-2000 and a phosphor. The display has (A) the above EL device

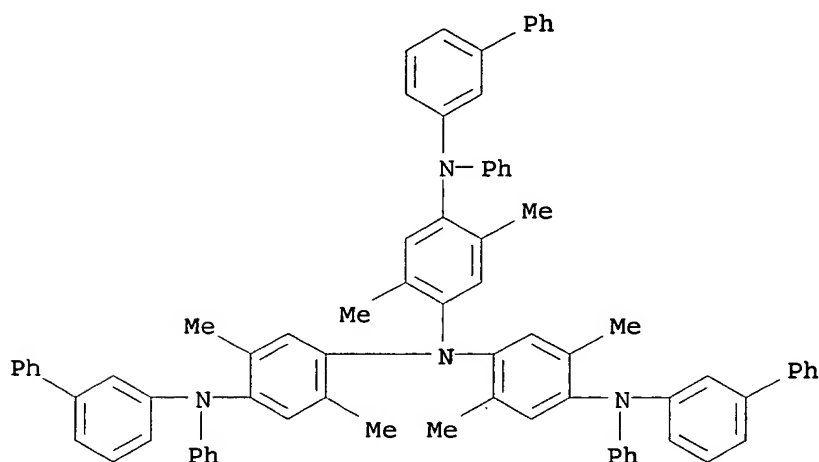
or (B) a conversion layer for absorption of the emission of the above EL device and emission with different maximum wavelength. The use of  $\geq 2$  EL devices or conversion layers with different maximum emission wavelength enables full-color display devices. The display device shows low elec. power consumption because of high emission efficiency to improve service life.

IT 405172-07-8

(light-emitting layer containing; organic electroluminescent device with high emission efficiency and long service life for full-color display device)

RN 405172-07-8 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)-2,5-dimethylphenyl]-2,5-dimethyl-N-phenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-12; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 405171-47-3 405171-49-5 405171-50-8 405171-53-1

405171-54-2 405171-87-1 405172-07-8 405172-16-9

405173-85-5 426267-90-5 426267-91-6 426267-92-7

475057-09-1

(light-emitting layer containing; organic electroluminescent device with high emission efficiency and long service life for full-color display device)

L25 ANSWER 35 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:832741 HCAPLUS

DOCUMENT NUMBER: 137:343711

TITLE: Organic EL element and compound having benzofluoranthene derivatives used therein

INVENTOR(S): Fujita, Tetsuji; Kitagawa, Sumiko; Inoue, Tetsushi

PATENT ASSIGNEE(S): TDK Corporation, Japan

SOURCE: PCT Int. Appl., 331 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

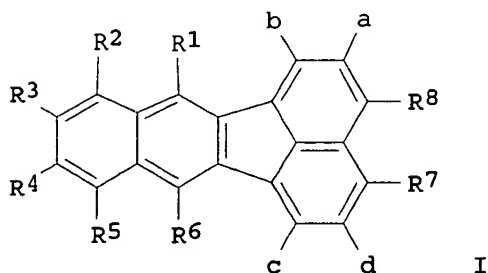
LANGUAGE: Japanese



FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002085822	A1	20021031	WO 2002-JP3925	2002 0419
W: CN, KR				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2003026616	A2	20030129	JP 2002-118057	2002 0419
EP 1380556	A1	20040114	EP 2002-722710	2002 0419
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
TW 581751	B	20040401	TW 2002-91108294	2002 0419
PRIORITY APPLN. INFO.:			JP 2001-121788	A 2001 0419
			WO 2002-JP3925	W 2002 0419

OTHER SOURCE(S): MARPAT 137:343711  
GI

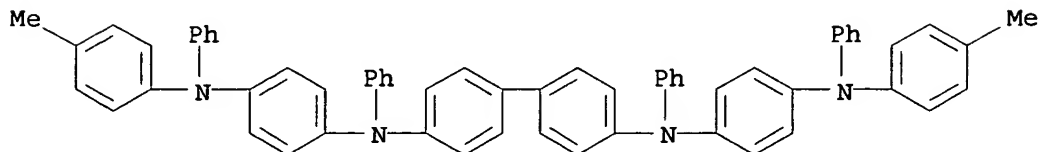


AB Title compound is represented by a general formula  $X_nY$  [  $X = I$ ;  $Y =$  a single bond or (un)substituted aryl or heterocyclic linkage;  $n = 2$  or  $3$ ;  $R1-8, a - d = H, alkyl, (un)substituted aryl, allyl, heterocyclyl, or arylamino, or amino$ ]. The compound offers an excellent durability and an excellent color purity with great satisfactory luminescent performance.

IT 203007-32-3P  
(hole injection layer; electroluminescent devices having benzofluoranthene derivs.)

RN 203007-32-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-methylphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C013-62  
ICS C07C211-54; C07C211-61; C09K011-06; C07D213-06; C07D333-08;  
C07D333-76; H05B033-14; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 24, 76  
IT 203007-32-3P  
(hole injection layer; electroluminescent devices having  
benzofluoranthene derivs.)  
IT 16391-62-1P 216066-60-3P 249288-65-1P 272459-50-4P  
368884-55-3P  
(light emitting layer; electroluminescent  
devices having benzofluoranthene derivs.)  
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 36 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2002:368916 HCAPLUS  
DOCUMENT NUMBER: 136:393041  
TITLE: Organic electroluminescent devices  
INVENTOR(S): Toguchi, Satoru; Ishikawa, Hitoshi; Tada,  
Hiroshi; Oda, Atsushi  
PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., Japan  
SOURCE: U.S. Pat. Appl. Publ., 87 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2002058156	A1	20020516	US 2001-985657	2001 1105
US 6746784	B2	20040608		
JP 2002151263	A2	20020524	JP 2000-339603	2000 1107
JP 3548841	B2	20040728		
JP 2002151264	A2	20020524	JP 2000-339604	2000 1107
JP 3548842	B2	20040728		
JP 2002151265	A2	20020524	JP 2000-339605	

2000  
1107JP 3548843  
PRIORITY APPLN. INFO.:

B2 20040728

JP 2000-339603

A

2000  
1107

JP 2000-339604

A

2000  
1107

JP 2000-339605

A

2000  
1107

OTHER SOURCE(S): MARPAT 136:393041

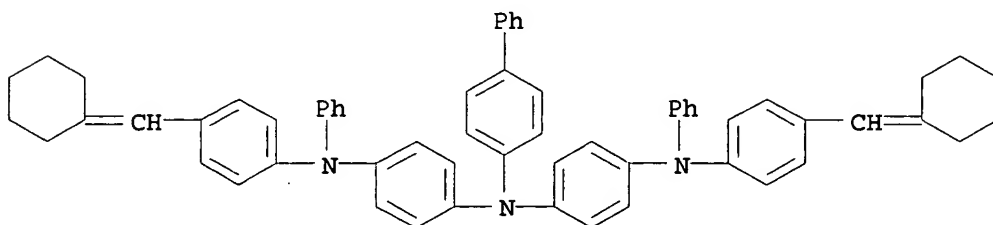
AB Organic electroluminescent devices comprising an anode; a cathode; and  $\geq 1$  organic thin film layers including a light-emitting layer sandwiched between said anode and said cathode ADIW  $\geq 1$  organic thin film layer contains a compound including an (un)substituted cyclohexylidenemethine group.

IT 426218-60-2P 426218-61-3P

(organic electroluminescent devices employing cyclohexylidenemethine derivs.)

RN 426218-60-2 HCAPLUS

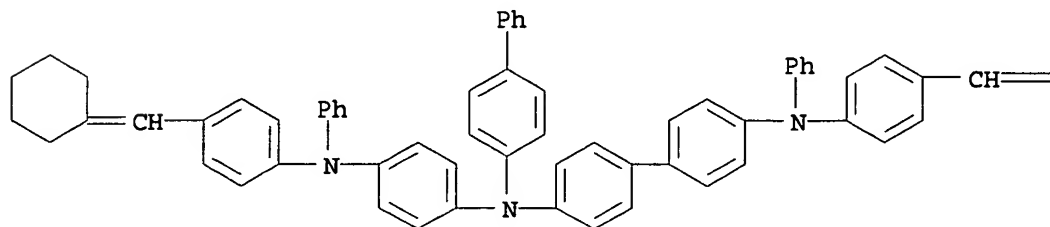
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N'-[4-(cyclohexylidenemethyl)phenyl]-N-[4-[(4-(cyclohexylidenemethyl)phenyl)phenylamino]phenyl]-N'-phenyl- (9CI)  
(CA INDEX NAME)



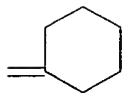
RN 426218-61-3 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-[1,1'-biphenyl]-4-yl-N'-[4-(cyclohexylidenemethyl)phenyl]-N-[4-[(4-(cyclohexylidenemethyl)phenyl)phenylamino]phenyl]-N'-phenyl- (9CI)  
(CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC H05B033-12

INCL 428690000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

IT 426218-12-4P 426218-13-5P 426218-14-6P 426218-15-7P  
 426218-16-8P 426218-17-9P 426218-18-0P 426218-19-1P  
 426218-20-4P 426218-21-5P 426218-22-6P 426218-23-7P  
 426218-24-8P 426218-25-9P 426218-26-0P 426218-27-1P  
 426218-28-2P 426218-30-6P 426218-31-7P 426218-32-8P  
 426218-33-9P 426218-34-0P 426218-35-1P 426218-36-2P  
 426218-37-3P 426218-38-4P 426218-40-8P 426218-41-9P  
 426218-42-0P 426218-44-2P 426218-46-4P 426218-47-5P  
 426218-49-7P 426218-50-0P 426218-52-2P 426218-53-3P  
 426218-54-4P 426218-55-5P 426218-56-6P 426218-59-9P  
 426218-60-2P 426218-61-3P 426252-99-5P  
 426253-00-1P 426253-01-2P

(organic electroluminescent devices employing  
 cyclohexylidenemethine derivs.)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 37 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:142393 HCAPLUS

DOCUMENT NUMBER: 136:408646

TITLE: Effect of  $\alpha$ -NPD film in electron  
 transport layer on electroluminescence color  
 change for organic light emitting devices  
 AUTHOR(S): Lee, Sungsoo; Chung, Chan-Hwa; Cho, Sung M.  
 CORPORATE SOURCE: Department of Chemical Engineering,  
 Sungkyunkwan University, Suwon, 440-746, S.  
 Korea

SOURCE: Synthetic Metals (2002), 126(2-3), 269-273

CODEN: SYMEDZ; ISSN: 0379-6779

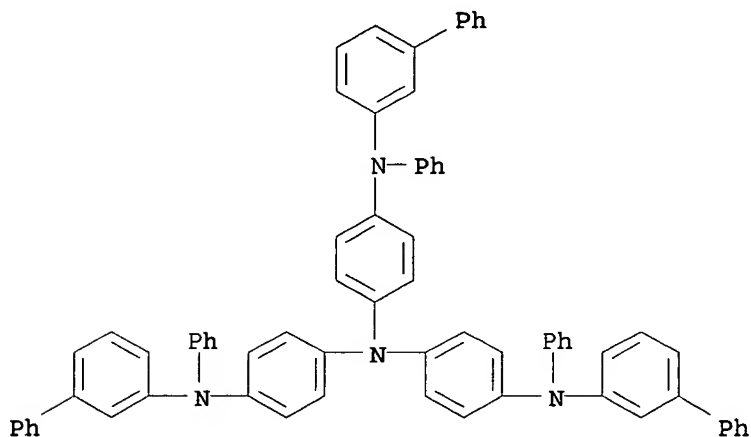
PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To study the carrier recombination zone for organic light emitting  
 devices (OLEDs), 3 different organic materials were deposited in  
 series for the emissive layer (EML) between the hole transport  
 layer (HTL) and electron transport layer (ETL). Since the EML was  
 supposed to emit 3 different colors from 3 sep. emissive  
 materials, the recombination zone could be studied by observing  
 electroluminescence (EL) spectra of the OLEDs. By introducing a  
 hole transport material, 4,4-bis[N-(1-naphthyl)-N-phenyl-  
 amino]biphenyl ( $\alpha$ -NPD) in the EML as an electron-blocking  
 layer, the carrier recombination zone could be divided by the  
 $\alpha$ -NPD layer and the EL color could be changed as the result.  
 It was known from this study that the electron-blocking  
 $\alpha$ -NPD layer effectively limits the electron transport in the  
 EML and divides the recombination zone to change the EL color.

IT	214545-00-3	(effect of $\alpha$ -NPD film in electron transport layer on electroluminescence color change for organic light emitting devices)
RN	214545-00-3	HCAPLUS
CN	1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)	



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76

IT 2085-33-8, Hydroxyquinoline aluminum 51325-95-2, DCM2  
123847-85-8,  $\alpha$ -NPD 142289-08-5, DPVBi 214545-00-3  
(effect of  $\alpha$ -NPD film in electron transport layer on electroluminescence color change for organic light emitting devices)

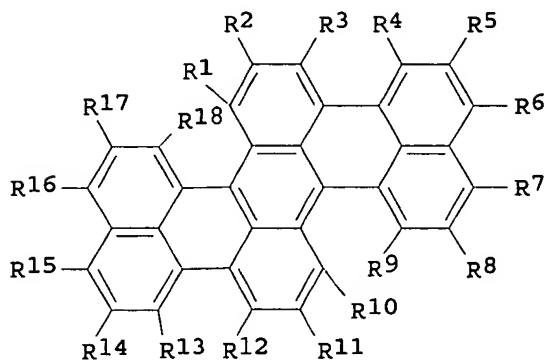
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 38 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:881986 HCAPLUS  
DOCUMENT NUMBER: 136:29034  
TITLE: Diperinaphthyleneanthracene derivatives and  
organic electroluminescent devices using them  
INVENTOR(S): Higashiguchi, Itaru; Ishikawa, Hitoshi; Tada,  
Hiroshi; Oda, Atsushi  
PATENT ASSIGNEE(S): NEC Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001338760	A2	20011207	JP 2000-155332	2000 0525

US 2002022150	A1	20020221	US 2001-863465	2001 0524
US 6682831	B2	20040127		
PRIORITY APPLN. INFO.:			JP 2000-155332	A 2000 0525

OTHER SOURCE(S): MARPAT 136:29034  
GI

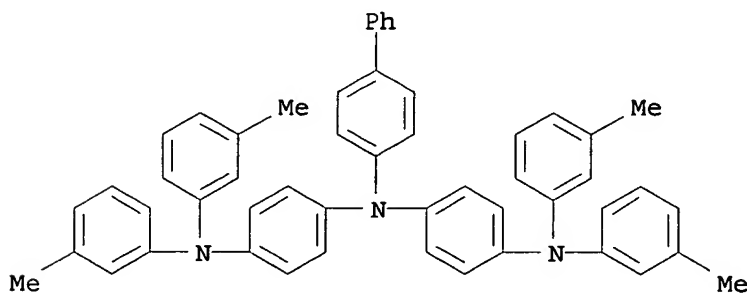


AB The invention relates to an electroluminescent device comprising a pair of electrodes sandwiching  $\geq 1$  layer(s) containing  $\geq 1$  1,9:5,10-di(perinaphthylene)anthracene I [ R1-18 = the same or different groups selected from H, halo, OH, NH<sub>2</sub>, NO<sub>2</sub>, CN, CO<sub>2</sub>H, (un)substituted of alkyl, alkenyl, NH<sub>2</sub>, cycloalkyl, alkoxy, aromatic hydrocarbonyl, aromatic heterocycloalkyl, aralkyl, aryloxy, and alkoxy carbonyl, and fused rings formed with adjacent substituents, etc.].

IT 181367-28-2P 227939-49-3P  
(hole injection/transport layer; organic electroluminescent devices containing)

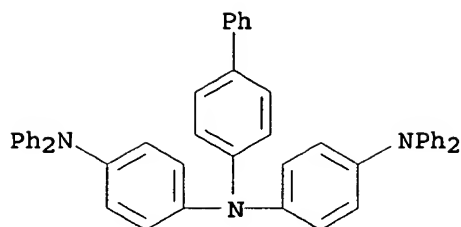
RN 181367-28-2 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-[bis(3-methylphenyl)amino]phenyl]-N',N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 227939-49-3 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25  
IT 65181-78-4P 123847-85-8P 181367-28-2P  
227939-49-3P  
(hole injection/transport layer; organic electroluminescent devices containing)  
IT 2085-33-8P, Alq3 138372-67-5P 194794-43-9P  
(light-emitting layer; organic electroluminescent devices containing)

L25 ANSWER 39 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:626018 HCAPLUS

DOCUMENT NUMBER: 135:187696

TITLE: Electroluminescent device containing new electron transport substance for improving luminescent properties, heat-resistance, and durability

INVENTOR(S): Shirota, Yasuhiko

PATENT ASSIGNEE(S): Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001233882	A2	20010828	JP 2000-51210	2000 0228

PRIORITY APPLN. INFO.: JP 2000-51210

2000  
0228

AB The invention relates to an electroluminescent display device which contains 1,3,5-tris[5-(dimethylboryl)-2-thienyl]benzene in an electron transport layer. The electroluminescent display device contains tris(p-terphenyl-4-yl)amine in a luminescent layer. The electroluminescent display device contains an organic compound selected from 4,4',4''-tris(3-methylphenylphenylamino)triphenylamine, 4,4',4''-tris(1-naphthylphenylamino)triphenylamine, 4,4',4''-tris(2-naphthylphenylamino)triphenylamine, 4,4',4''-tris[biphenyl-2-

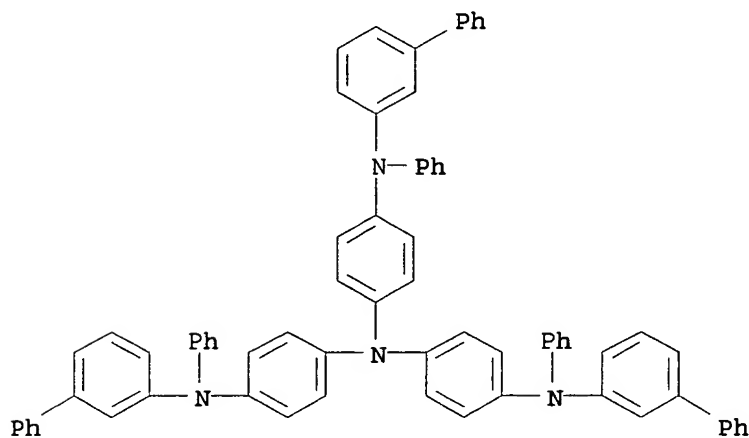
yl(phenyl)amino]triphenylamine, 4,4',4''-tris[biphenyl-3-yl(phenyl)amino]triphenylamine, 4,4',4''-tris[biphenyl-4-yl(3-methylphenyl)amino]triphenylamine, and 4,4',4''-tris[9,9-dimethyl-2-fluorenyl(phenyl)amino]triphenylamine in a pos. hole injection layer. The electroluminescent device is suitable for blue- and full color-flat panel displays.

IT 214545-00-3P 281678-62-4P 281678-63-5P

(preparation of compound useful for pos. hole injection layer of electroluminescent device)

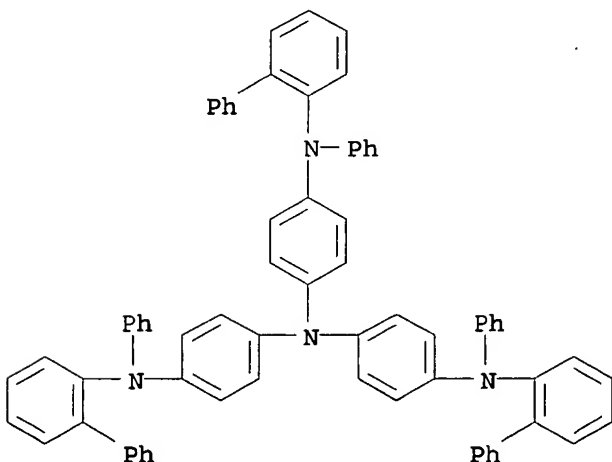
RN 214545-00-3 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 281678-62-4 HCAPLUS

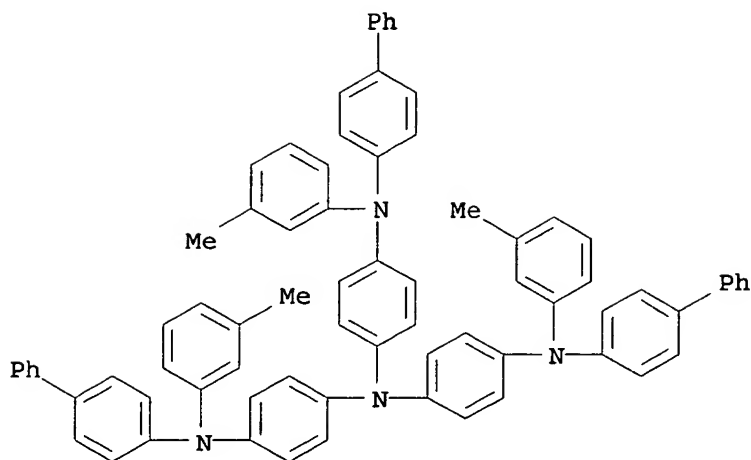
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-2-yl-N',N'-bis[4-([1,1'-biphenyl]-2-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 281678-63-5 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-([1,1'-biphenyl]-4-yl(3-methylphenyl)amino)phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)





- IC ICM C07F005-02  
ICS C07C211-54; C07D221-18; C09K011-06; H05B033-14; H05B033-22
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73
- IT Electroluminescent devices  
(electroluminescent device containing new electron transport substance for improving **luminescent** properties, heat-resistance, and durability)
- IT 355832-02-9P  
(electron transport substance in electroluminescent device with improved **luminescent** properties, heat-resistance, and durability)
- IT 145693-79-4P  
(in **luminescent** layer; electroluminescent device containing new electron transport substance for improving **luminescent** properties, heat-resistance, and durability)
- IT 124729-98-2P, 4,4',4''-Tris(3-methylphenylphenylamino)triphenylamine  
(in pos. hole injection layer; electroluminescent device containing new electron transport substance for improving **luminescent** properties, heat-resistance, and durability)
- IT 92-66-0, 4-Bromobiphenyl  
(preparation of compound useful for **luminescent** layer of electroluminescent device)
- IT 185690-39-5P 185690-41-9P, 4,4',4''-Tris(2-naphthylphenylamino)triphenylamine 214545-00-3P  
281678-62-4P 281678-63-5P 303111-06-0P  
(preparation of compound useful for pos. hole injection layer of electroluminescent device)

L25 ANSWER 40 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:603530 HCAPLUS

DOCUMENT NUMBER: 135:187795

TITLE: New amine compound for organic electroluminescent device showing longer luminescent lifetime and excellent durability

INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu;



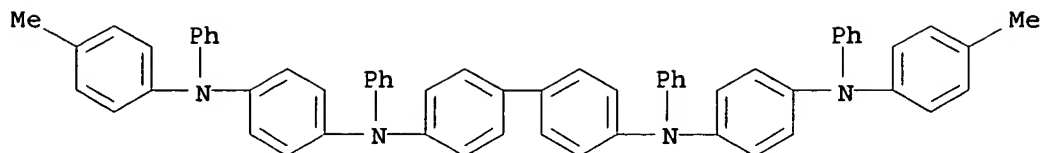
ICS C07C217-94; C07D209-86; C07D213-74; C07D265-38; C07D279-26;  
 C07D333-36; C09K011-06; H05B033-14; H05B033-22  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73  
 IT 354987-33-0 354987-34-1 354987-35-2 **354987-37-4**  
 354987-38-5 354987-40-9 354987-41-0 354987-44-3  
 354987-45-4 354987-48-7 354987-49-8 354987-51-2  
 354987-53-4 354987-54-5 354987-56-7 354987-57-8  
 354987-59-0 354987-60-3 354987-61-4 354987-63-6  
 354987-64-7 354987-65-8 354987-66-9 354987-69-2  
 354987-70-5 354987-72-7 354987-73-8  
 (amine compound for organic electroluminescent device showing longer  
 luminescent lifetime and excellent durability)

L25 ANSWER 41 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:521204 HCAPLUS  
 DOCUMENT NUMBER: 135:114241  
 TITLE: Organic electroluminescent devices  
 INVENTOR(S): Arai, Michio  
 PATENT ASSIGNEE(S): TDK Corporation, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001196175	A2	20010719	JP 2000-1369	2000 0107
US 2001043043	A1	20011122	US 2001-755446	2001 0106
PRIORITY APPLN. INFO.:			JP 2000-1368	A 2000 0107
			JP 2000-1369	A 2000 0107
			JP 2000-259433	A 2000 0829

AB The devices typically comprise: a glass substrate; a blue, a green  
 and a red filter; a blue, a green and a red fluorescent layer; an  
 ITO electrode layer; a hole transport layer; a Alq3 phosphor  
 layer; a LiAl electrode layer, where the device emits a white  
 light.  
 IT 203007-32-3  
 (organic EL display emitting white  
 light)  
 RN 203007-32-3 HCAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-  
 methylphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX

NAME)



IC ICM H05B033-12  
 ICS C23C014-06; G09F009-00; G09F009-30; H05B033-04; H05B033-10;  
 H05B033-14  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 IT 147-14-8, Phthalocyanine blue 2085-33-8, Tris(8-  
 quinolinolato)aluminum 12798-95-7 38215-36-0, coumarin 6  
 39283-39-1, Quinacridone red 50926-11-9, ITO 65181-78-4, TPD  
 124729-98-2, MTDATA 169224-63-9 203007-32-3  
 (organic EL display emitting white  
 light)

L25 ANSWER 42 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:463212 HCAPLUS  
 DOCUMENT NUMBER: 135:68360  
 TITLE: Electroluminescent devices and organic  
 compounds for hole transporters  
 INVENTOR(S): Shirota, Yasuhiko  
 PATENT ASSIGNEE(S): Osaka University, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001172232	A2	20010626	JP 1999-362784	1999 1221
JP 3735703	B2	20060118	JP 1999-362784	1999 1221

PRIORITY APPLN. INFO.:

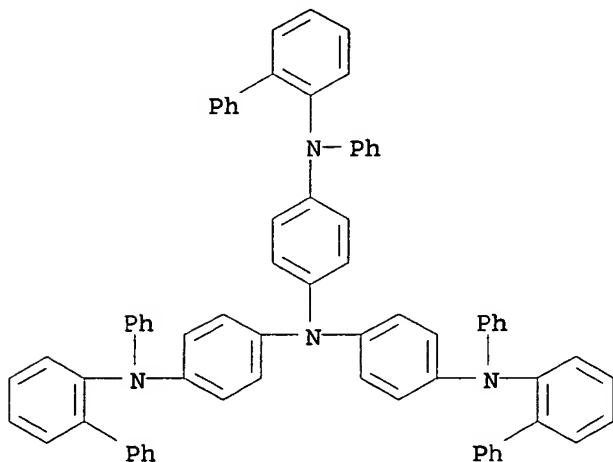
AB The device comprises a substrate, a transparent electrode, a hole-transport layer containing 4,4',4"-tris[biphenyl-2-yl(phenyl)amino]triphenylamine and/or 4,4',4"-tris[biphenyl-4-yl(3-methylphenyl)amino]triphenylamine, a light-emitting layer, and a backing electrode laminated in the order. The device may also contain a 2nd hole-transport layer containing N,N'-di(biphenyl-4-yl)-N,N'-diphenyl-(1,1'-biphenyl)-4,4'-diamine. The light-emitting layer may comprise tris(8-quinolinolato)aluminum. The compds. specified above and their use as hole transporters are also claimed. The devices are especially suitable for use in full color flat panel displays.

IT 281678-62-4P 281678-63-5P

(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

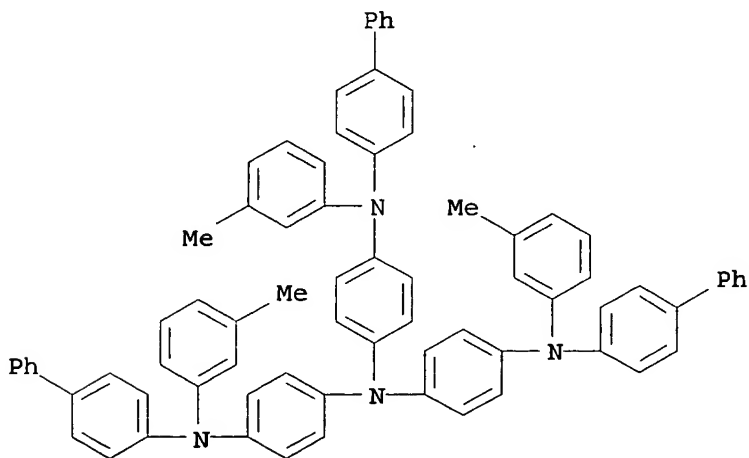
RN 281678-62-4 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-2-yl-N',N'-bis[4-([1,1'-biphenyl]-2-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 281678-63-5 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-([1,1'-biphenyl]-4-yl(3-methylphenyl)amino)phenyl]-N-(3-methylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 74

IT Optical imaging devices

(full-color flat panel displays; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices)

for high luminance)

IT Hole transport  
(hole transporters; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

IT Electroluminescent devices  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

IT 134008-76-7  
(hole transporter; tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

IT 2085-33-8, Tris(8-quinolinolato)aluminum  
(light-emitting layer;  
tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

IT 281678-62-4P 281678-63-5P  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

IT 4181-20-8 32228-99-2, N-Phenyl-4-biphenylamine 148935-08-4  
(tris[biphenyl(phenyl)amino]triphenylamines as hole transporters in electroluminescent devices for high luminance)

L25 ANSWER 43 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:228988 HCAPLUS

DOCUMENT NUMBER: 134:273305

TITLE: Organic electroluminescence and organic luminous medium

INVENTOR(S): Hosokawa, Chishio; Higashi, Hisahiro; Fukuoka, Kenichi; Ikeda, Hidetsugu

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001021729	A1	20010329	WO 2000-JP6402	2000 0920
W: CN, IN, JP, KR				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1167488	A1	20020102	EP 2000-961101	2000 0920
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 474113	B	20020121	TW 2000-89119391	2000 0920
US 6534199	B1	20030318	US 2000-665416	2000

PRIORITY APPLN. INFO.: JP 1999-267460 A 0920  
1999  
0921

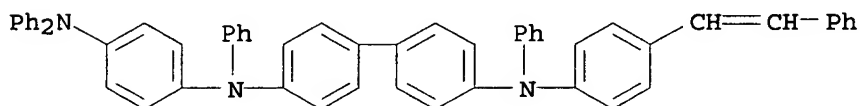
WO 2000-JP6402 W 2000  
0920

AB The invention refers to a organic electroluminescent device comprising a mono-, di- or tri- styryl amine, and at least one of the anthracene derivs., A1LA1 [A1,2 = (un)substituted mono Ph anthryl, or (un)substituted di-Ph anthryl; L = single bond or divalent chain] and A3AnA4 [An = (un)substituted anthracene; A3,4 = (un)substituted condensed aromatic ring, or (un)substituted C12+ chain uncondensed aryl ring].

IT 331749-35-0  
(organic electroluminescence and organic luminous medium)

RN 331749-35-0 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-[4-(diphenylamino)phenyl]-N,N'-diphenyl-N'-[4-(2-phenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 55035-42-2 55035-43-3 119564-21-5 122648-99-1 167022-38-0  
172285-76-6 172285-79-9 205930-46-7 209980-47-2  
219785-99-6 221453-32-3 221453-38-9 229479-60-1  
279672-57-0 331749-28-1 331749-29-2 331749-30-5  
331749-31-6 331749-32-7 331749-33-8 331749-34-9  
331749-35-0  
(organic electroluminescence and organic luminous medium)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 44 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:377749 HCAPLUS

DOCUMENT NUMBER: 133:96506

TITLE: Thermally stable organic light-emitting diodes using new families of hole-transporting amorphous molecular materials

AUTHOR(S): Shirota, Y.; Okumoto, K.; Inada, H.

CORPORATE SOURCE: Faculty of Engineering, Department of Applied Chemistry, Osaka University, Yamadaoka, Suita, Osaka, 565-0871, Japan

SOURCE: Synthetic Metals (2000), 111-112, 387-391

CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science S.A.

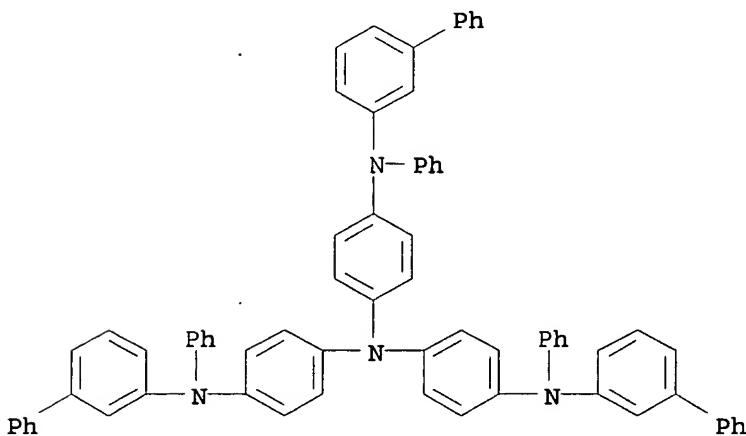
DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB A new family of hole-transporting amorphous mol. materials with high glass-transition temps. (T<sub>g</sub>) were designed and synthesized. They include 4,4',4''-tris[biphenyl-2-yl(phenyl)amino]triphenylamine (o-PTDATA), 4,4',4''-tris[biphenyl-3-yl(phenyl)amino]triphenylamine (m-PTDATA), and 4,4',4''-tris[biphenyl-4-yl(3'-methylphenyl)amino]triphenylamine (p-PMTDATA). These compds. form readily stable amorphous glasses with high T<sub>g</sub> and to function as materials for hole-injection layers in contact with the ITO electrode in multilayer organic light-emitting diodes (OLEDs). Such devices consisting of double hole-transport layers of o-PTDATA or p-PMTDATA and N,N'-di(biphenyl-4-yl)-N,N'-diphenyl-[1,1'-biphenyl]-4,4'-diamine and the emitting layer of tris(8-quinolinolato)aluminum exhibit high performance and thermal stability. The devices operated at 150°, retaining a luminance of 80% of the initial value measured at 20°.

IT 214545-00-3P 281678-62-4P 281678-63-5P  
 (thermally stable organic light-emitting diodes using new families of hole-transporting amorphous mol. materials)

RN 214545-00-3 HCAPLUS

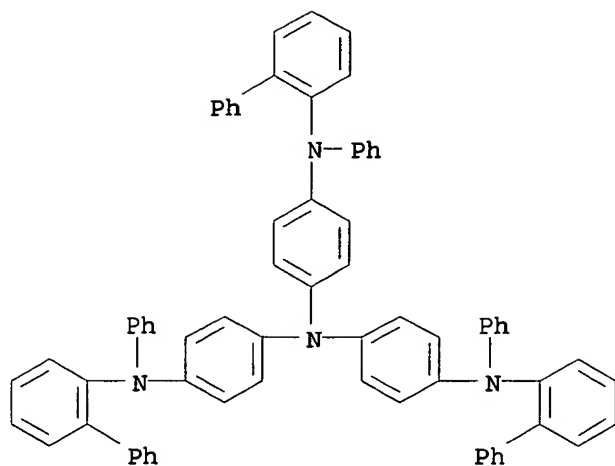
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 281678-62-4 HCAPLUS

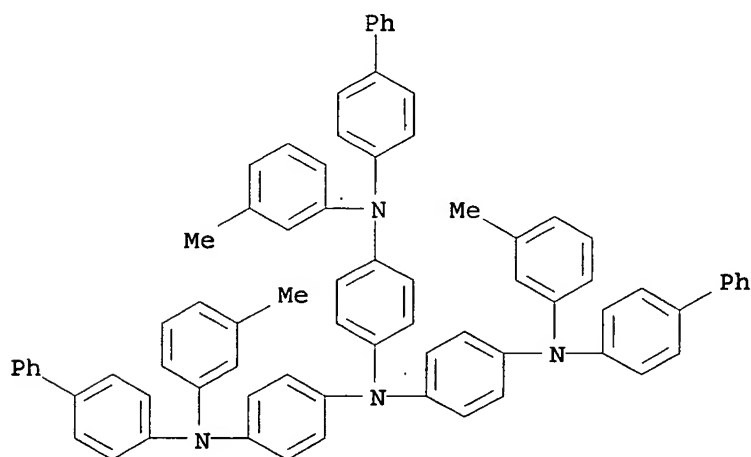
CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-2-yl-N',N'-bis[4-([1,1'-biphenyl]-2-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)





RN 281678-63-5 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N',N'-bis[4-[[[1,1'-biphenyl]-4-yl(3-methylphenyl)amino]phenyl]-N-(3-methylphenyl)-(9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 75, 76

IT Crystallization

(temperature; thermally stable organic **light-emitting** diodes using new families of hole-transporting amorphous mol. materials)

IT Electroluminescent devices

Glass transition temperature

Hole transport

Melting point

Thermal stability

(thermally stable organic **light-emitting** diodes using new families of hole-transporting amorphous mol. materials)

IT 2085-33-8, Hydroxyquinoline aluminum 37271-44-6 50926-11-9,

ITO 65181-78-4, [1,1'-Biphenyl]-4,4'-diamine,  
N,N'-bis(3-methylphenyl)-N,N'-diphenyl-  
(thermally stable organic light-emitting  
diodes using new families of hole-transporting amorphous mol.  
materials)

IT 214545-00-3P 281678-62-4P 281678-63-5P  
(thermally stable organic light-emitting  
diodes using new families of hole-transporting amorphous mol.  
materials)

IT 134008-76-7 144726-87-4 169224-62-8  
(thermally stable organic light-emitting  
diodes using new families of hole-transporting amorphous mol.  
materials)

IT 4181-20-8, Tris(4-iodophenyl)amine 35887-50-4 148935-08-4  
198275-79-5  
(thermally stable organic light-emitting  
diodes using new families of hole-transporting amorphous mol.  
materials)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 45 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:363829 HCAPLUS

DOCUMENT NUMBER: 133:24764

TITLE: Organic electroluminescent display devices  
with high luminance and efficient light  
emission

INVENTOR(S): Onikubo, Shunichi; Tamano, Michiko

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000150152	A2	20000530	JP 1998-324629	1998 1116

PRIORITY APPLN. INFO.: JP 1998-324629

1998  
1116

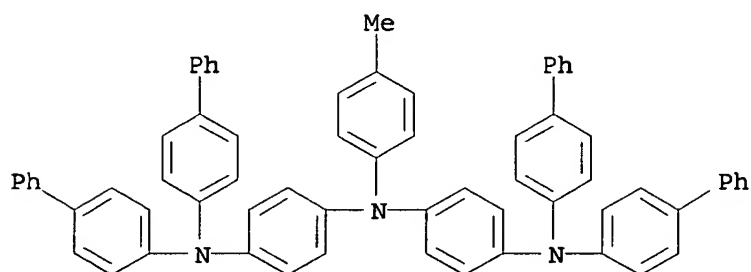
AB The device comprises a multicolored light-emitting layer and  
either or both of hole- and electron-injection layer(s) sandwiched  
in between a pair of electrodes. The light-emitting layer  
comprises multiple light-emitting regions having different colors  
and the hole- or the electro-injection layer is formed entirely on  
the light-emitting layer. Preferable compds. for each of the  
layers are given. Devices showing constant emission of each color  
are obtained.

IT 272117-02-9  
(hole-injection layer; electroluminescent display devices with  
high luminance and uniform emission of each colors)

RN 272117-02-9 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis([1,1'-biphenyl]-4-yl)-N'-[4-[bis([1,1'-

biphenyl]-4-yl)amino]phenyl]-N'-(4-methylphenyl)-(9CI) (CA INDEX NAME)



IC ICM H05B033-12  
ICS G09F009-30; H05B033-14; H05B033-22  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 147-14-8, Copper phthalocyanine 574-93-6, Phthalocyanine 808-57-1, 2,3,6,7,10,11-Hexamethoxytriphenylene 32829-11-1 58473-78-2, 1,1-Bis[4-(di-p-tolylamino)phenyl]cyclohexane 65181-78-4 76185-65-4 123847-85-8 124729-98-2 151026-65-2 166444-98-0 208939-03-1 244281-07-0 272117-02-9 272117-03-0

(hole-injection layer; electroluminescent display devices with high luminance and uniform emission of each colors)

L25 ANSWER 46 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:672937 HCAPLUS  
DOCUMENT NUMBER: 131:305016  
TITLE: Organic electroluminescent device  
INVENTOR(S): Higashi, Hisahiro; Hosokawa, Chishio  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 51 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9952992	A1	19991021	WO 1999-JP1873	1999 0408
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 992564	A1	20000412	EP 1999-913588	1999 0408
R: DE, FR, GB				
US 6406804	B1	20020618	US 2000-424870	2000 0201
US 2002136924	A1	20020926	US 2002-78666	2002

US 6773831	B2	20040810		0221
PRIORITY APPLN. INFO.:			JP 1998-98013	A
				1998 0409
			WO 1999-JP1873	W
				1999 0408
			US 2000-424870	A1
				2000 0201

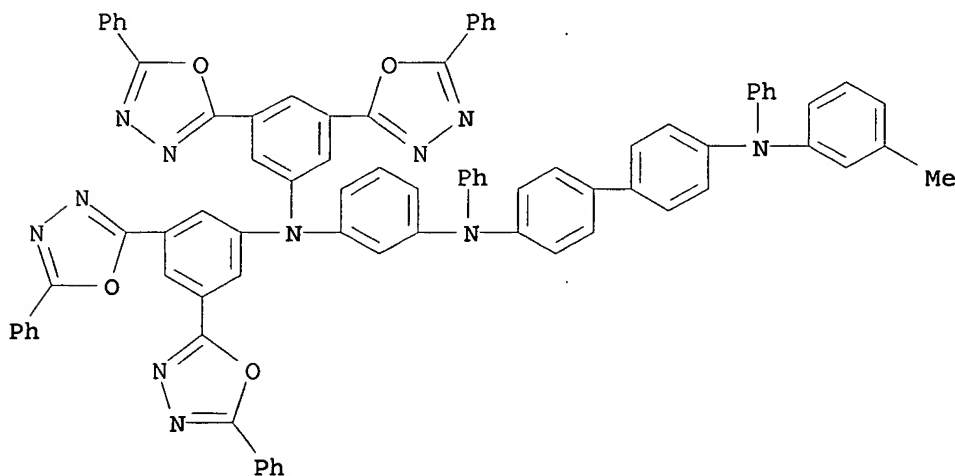
OTHER SOURCE(S): MARPAT 131:305016

AB A durable, high-luminance, organic electroluminescent device, which is easy to manufacture, has a luminescent layer between 2 electrodes. The luminescent layer contains a compound having a mol. structure in which electron carrier units and hole carrier units are coupled by bonding groups.

IT 247019-53-0P 247019-58-5P 247024-68-6P  
(in fabrication of organic electroluminescent device)

RN 247019-53-0 HCAPLUS

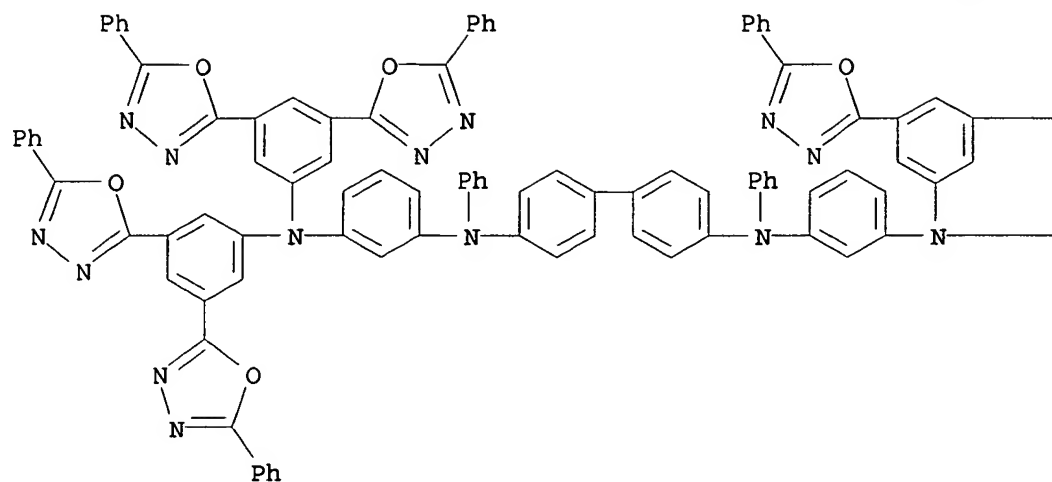
CN [1,1'-Biphenyl]-4,4'-diamine, N-[3-[bis[3,5-bis(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]amino]phenyl]-N'-(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



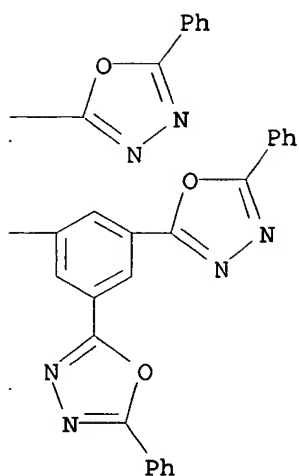
RN 247019-58-5 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[3-[bis[3,5-bis(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]amino]phenyl]-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)

PAGE 1-A

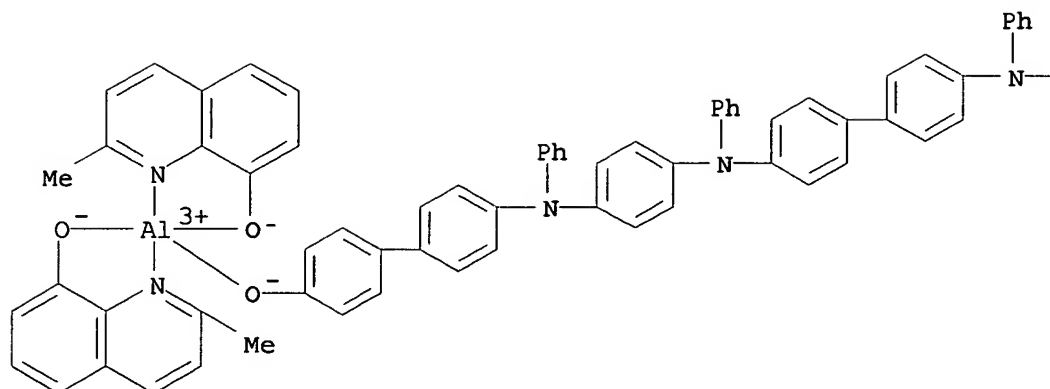


PAGE 1-B

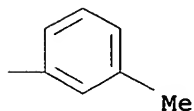


RN 247024-68-6 HCAPLUS  
 CN Aluminum, [4'-[[4-[[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]phenylamino]phenyl]phenylamino][1,1'-biphenyl]-4-olato-κO]bis(2-methyl-8-quinolinolato-κN1,κO8)-(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM C09K011-06  
ICS H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74  
IT 247019-26-7P 247019-53-0P 247019-58-5P  
247019-75-6P 247019-78-9P 247019-98-3P 247021-68-7P  
247024-67-5P 247024-68-6P 247024-69-7P 247024-70-0P  
(in fabrication of organic electroluminescent device)  
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L25 ANSWER 47 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:365685 HCAPLUS  
DOCUMENT NUMBER: 131:65685  
TITLE: 1,1'-Binaphthyl compounds and organic  
electroluminescent devices using them  
INVENTOR(S): Ishikawa, Hitoshi; Oda, Atsushi; Higashiguchi,  
Itaru  
PATENT ASSIGNEE(S): NEC Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11152253	A2	19990608	JP 1997-319430	

1997  
1120

JP 2882403  
US 6582837

B2 19990412  
B1 20030624

US 1998-112364

1998  
0709

PRIORITY APPLN. INFO.:

JP 1997-188639

A

1997  
0714

JP 1997-319430

A

1997  
1120

JP 1998-29996

A

1998  
0212

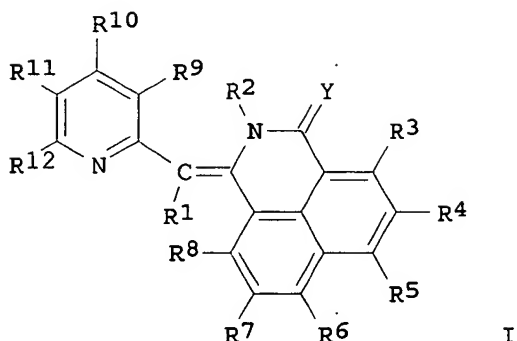
JP 1998-104564

A

1998  
0415

OTHER SOURCE(S) :  
GI

MARPAT 131:65685



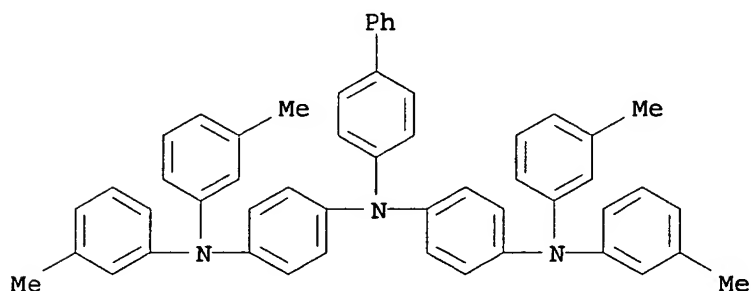
AB Claimed are 1,1'-binaphthyl compds. I [R1-R14 = H, halo, OH, (un)substituted amino, NO<sub>2</sub>, cyano, (un)substituted alkyl, (un)substituted alkenyl, (un)substituted cycloalkyl, (un)substituted alkoxy, (un)substituted aromatic hydrocarbyl, (un)substituted aromatic heterocyclyl, (un)substituted aralkyl, (un)substituted aryloxy, (un)substituted alkoxycarbonyl, carboxyl; 2 of R1-R7 or R8-R14 may form a ring; at least 1 of R1-R14 is NAr<sub>1</sub>Ar<sub>2</sub>; Ar<sub>1</sub> = C6-20 substituted aryl having at least 1 styryl substituent; Ar<sub>2</sub> = C6-20 (un)substituted aryl]. A laminated organic electroluminescent device having ≥1 organic thin-film layer including a pos. hole-transporting layer containing I and a laminated organic electroluminescent devices containing a light-emitting layer or an electron-transporting layer containing I [R1-R14 = same as above; Ar<sub>1</sub>, Ar<sub>2</sub> = C6-20 (un)substituted aryl] are also claimed. The devices show high luminance.

IT 181367-28-2 227939-49-3  
(pos. hole-transporting material; preparation of binaphthyl compds.

for high-luminance laminated organic  
electroluminescent device)

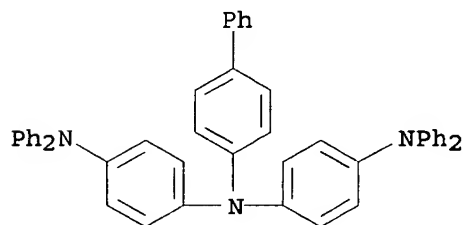
RN 181367-28-2 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-[bis(3-methylphenyl)amino]phenyl]-N',N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



RN 227939-49-3 HCAPLUS

CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-4-yl-N-[4-(diphenylamino)phenyl]-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-57

ICS C09K011-00; C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

IT 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-4,4'-diamine 123847-85-8 181367-28-2

227939-49-3

(pos. hole-transporting material; preparation of binaphthyl compds. for high-luminance laminated organic electroluminescent device)

L25 ANSWER 48 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:685335 HCAPLUS

DOCUMENT NUMBER: 129:323790

TITLE: Organic EL (electroluminescent) device containing triarylamine derivative  
INVENTOR(S): Inoue, Tetsuji; Shirota, Yasuhiko; Aotani, Junji

PATENT ASSIGNEE(S): TDK Electronics Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1



## PATENT INFORMATION:

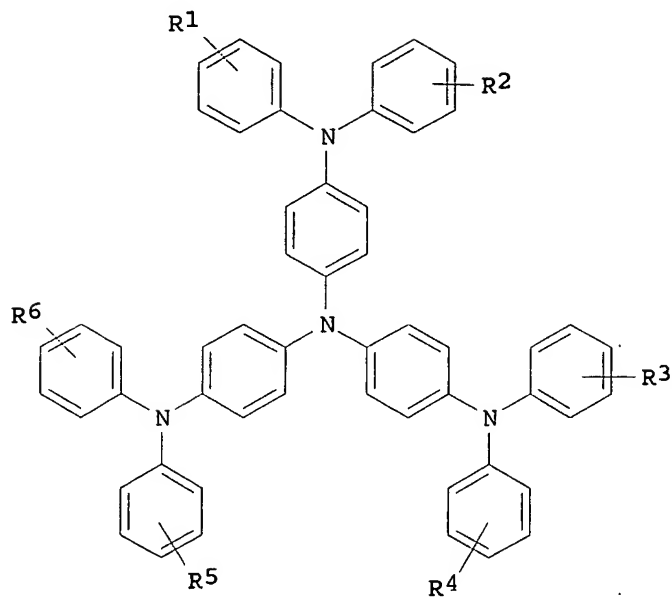
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10284252	A2	19981023	JP 1997-101078	1997 0403

PRIORITY APPLN. INFO.:

JP 1997-101078

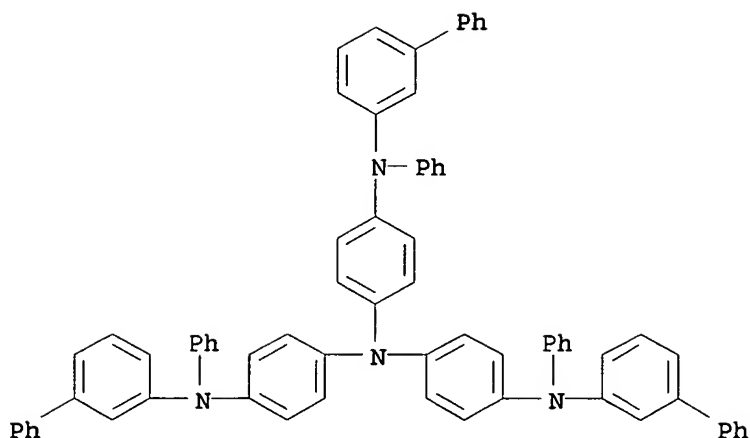
1997  
0403OTHER SOURCE(S):  
GI

MARPAT 129:323790

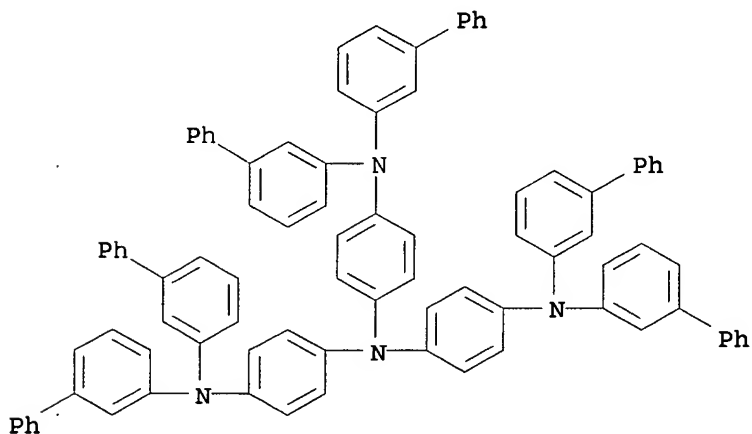


I

- AB The device has  $\geq 1$  organic compound layer containing a triarylamine derivative I (R1-6 = H, alkyl, alkoxy, 3-Ph, phenoxy, arylamino, diarylamino;  $\geq 1$  of R1-6 = 3-Ph, arylamino, diarylamino). The device showed low driving voltage, high and stable luminance, and good heat resistance.
- IT 214545-00-3P 214545-01-4P  
(high-luminance electroluminescent device containing triarylamine derivative)
- RN 214545-00-3 HCAPLUS
- CN 1,4-Benzenediamine, N-[1,1'-biphenyl]-3-yl-N',N'-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N-phenyl- (9CI) (CA INDEX NAME)



RN 214545-01-4 HCAPLUS  
 CN 1,4-Benzenediamine, N,N-bis([1,1'-biphenyl]-3-yl)-N',N'-bis[4-(bis[1,1'-biphenyl]-3-ylamino)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
 ICS C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25  
 IT Electroluminescent devices  
 (high-luminance electroluminescent device containing triarylamine derivative)  
 IT 124729-98-2P 214545-00-3P 214545-01-4P  
 214545-03-6P  
 (high-luminance electroluminescent device containing triarylamine derivative)  
 IT 214545-02-5P  
 (high-luminance electroluminescent device containing triarylamine derivative)  
 IT 74-31-7, N,N'-Diphenyl-1,4-phenylenediamine 624-31-7,  
 4-Iodotoluene 625-95-6, 3-Iodotoluene 4181-20-8,  
 4,4',4'''-Triiodotriphenylamine 169224-65-1 198275-79-5

(high-luminance electroluminescent device containing  
triarylamine derivative)

L25 ANSWER 49 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1998:488341 HCAPLUS  
DOCUMENT NUMBER: 129:115445  
TITLE: Organic electroluminescent device  
INVENTOR(S): Inoue, Tetsushi; Aotani, Junji; Fujita,  
Tetsuji; Endo, Hiroyuki  
PATENT ASSIGNEE(S): TDK Corp., Japan  
SOURCE: PCT Int. Appl., 157 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9830071	A1	19980709	WO 1997-JP4904	1997 1226
W: JP, US RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 891121	A1	19990113	EP 1997-950436	1997 1226
R: DE, FR, GB, NL				
JP 3654909	B2	20050602	JP 1998-529875	1997 1226
US 6344283	B1	20020205	US 1998-125791	1998 0828
US 2002102434	A1	20020801	US 2002-35161	2002 0104
US 6623872	B2	20030923		
US 2004110030	A1	20040610	US 2003-617688	2003 0714
JP 2005166680	A2	20050623	JP 2005-9449	2005 0117
PRIORITY APPLN. INFO.:			JP 1996-358416	A 1996 1228
			JP 1998-529875	A3 1997 1226
			WO 1997-JP4904	W 1997 1226
			US 1998-125791	A1 1998

0828

US 2002-35161

A1

2002  
0104

OTHER SOURCE(S):           MARPAT 129:115445  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

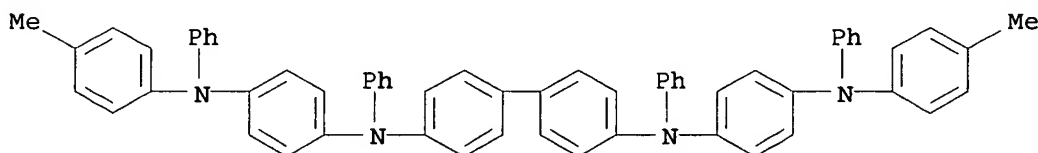
AB   An electroluminescent (EL) device comprises organic layers at least one of which comprises a compound having the skeleton represented by I [L = 2-4 phenylene groups, or (un)substituted aminophenyl group may be contained at the center if L0 comprises 4 phenylene rings; R1, R2, R3, and R4 = II, III, and IV; R11, R12, R13, R14, R15, R16, and R17 = (un)substituted aryl groups; and m, n, p, and q = integer 0-5, with (m+n+p+q)≥1].

IT   203007-32-3P 209980-48-3P 209980-49-4P  
209980-50-7P 209980-51-8P 209980-52-9P  
209980-53-0P

(organic electroluminescent elements)

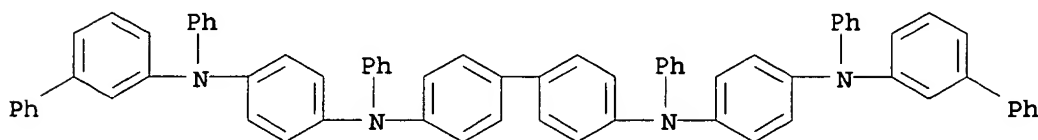
RN   203007-32-3 HCAPLUS

CN   [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(4-methylphenyl)phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN   209980-48-3 HCAPLUS

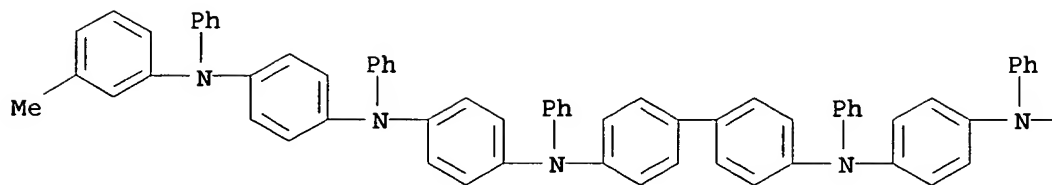
CN   [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[(1,1'-biphenyl)-3-ylphenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



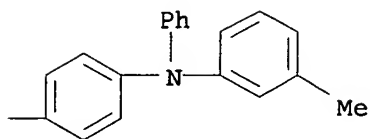
RN   209980-49-4 HCAPLUS

CN   [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-[(3-methylphenyl)phenylamino]phenyl]phenylamino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



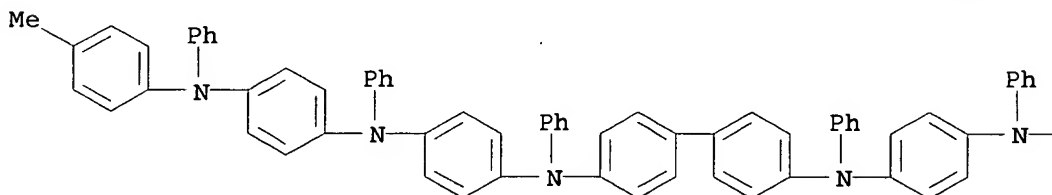
PAGE 1-B



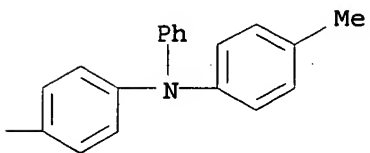
RN 209980-50-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-[(4-methylphenyl)phenylamino]phenyl]phenylamino]phenyl]-N,N'-diphenyl-(9CI) (CA INDEX NAME)

PAGE 1-A



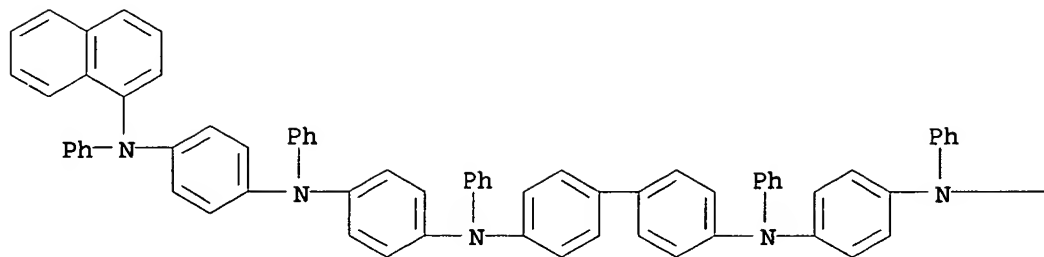
PAGE 1-B



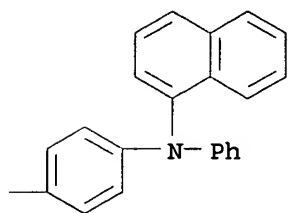
RN 209980-51-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[[4-(1-naphthalenylphenylamino)phenyl]phenylamino]phenyl]-N,N'-diphenyl-(9CI) (CA INDEX NAME)

PAGE 1-A

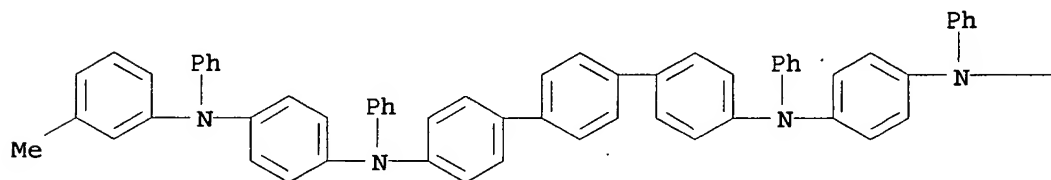


PAGE 1-B

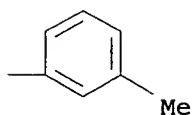


RN 209980-52-9 HCAPLUS  
 CN [1,1':4',1''-Terphenyl]-4,4''-diamine, N,N'-bis[4-[(3-methylphenyl)phenylaminolphenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

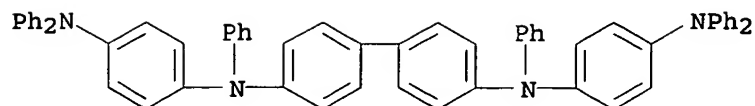
PAGE 1-A



PAGE 1-B



RN 209980-53-0 HCAPLUS  
 CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-(diphenylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
 ICS H05B033-14; C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT 517-51-1P, Rubren 2085-33-8P, Al 8q 169224-61-7P  
 203007-32-3P 209980-47-2P 209980-48-3P  
 209980-49-4P 209980-50-7P 209980-51-8P  
 209980-52-9P 209980-53-0P  
 (organic electroluminescent elements)  
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 50 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1998:116628 HCAPLUS  
 DOCUMENT NUMBER: 128:173587  
 TITLE: A novel class of  $\pi$ -electron dendrimers for thermally and morphologically stable amorphous molecular materials  
 AUTHOR(S): Katsuma, Katsuhiko; Shirota, Yasuhiko  
 CORPORATE SOURCE: Department Applied Chemistry, Faculty Engineering, Osaka University, Suita, 565, Japan  
 SOURCE: Advanced Materials (Weinheim, Germany) (1998), 10(3), 223-226  
 CODEN: ADVMEW; ISSN: 0935-9648  
 PUBLISHER: Wiley-VCH Verlag GmbH  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The novel organic hyperbranched  $\pi$ -electron systems, 1,3,5-tris[N-(4'-methylbiphenyl-4-yl)-N-(4-diphenylaminophenyl)amino]benzene (TDAB-G1(a)) and 1,3,5-tris[N-[4-bis(4-methylphenyl)aminophenyl]-N-(4-diphenylaminophenyl)amino]benzene (TDAB-G1(b)), were synthesized via the Ullmann reaction and characterized by <sup>1</sup>H-, <sup>13</sup>C-NMR, electron absorption spectroscopy, and elemental anal. TDAB-G1(a) was obtained as a polycryst. material, whereas TDAB-G1(b) was an amorphous glass. DSC anal. of TDAB-G1(a) gave a m.p. of 187°. When the melted sample was cooled in air, a glass was formed spontaneously. Reheating of the glass sample resulted in a glass transition at T<sub>g</sub> = 128° giving a supercooled liquid. Likewise, the amorphous repptd. sample of TDAB-G1(b) exhibited a glass transition at T<sub>g</sub> = 134° when heated. Unique multiredox processes involving as many as 6- and 9-electron reversible oxidns. were observed in the cyclic voltammograms of TDAB-G1(a) and TDAB-G1(b), resp. TDAB-G1(b) was used as a hole-transport material in a multilayer organic LED consisting of the double-hole transport layer and an emitting layer which contained N,N'-diphenyl-N,N'-bis(3-methylphenyl)-[1,1'-biphenyl]-4,4'-diamine (TPD) doped with rubrene as the emitting material and with tris(8-quinolinolato) Al as the electron transport material. This device emitted yellow light and the electroluminescence showed a peak at 560 nm in agreement with the

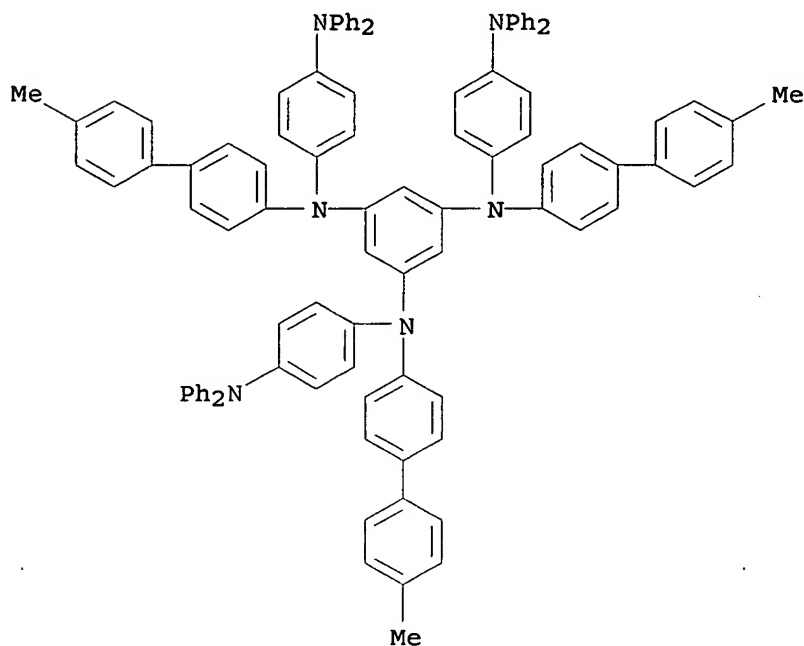
luminescence peak of rubrene.

IT 202868-44-8P

(preparation, glass transition, redox potential, and application in LED as hole transport material of)

RN 202868-44-8 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris[4-(diphenylamino)phenyl]-  
N,N',N''-tris(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX  
NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 72

IT 202868-44-8P 202868-45-9P

(preparation, glass transition, redox potential, and application in LED as hole transport material of)

L25 ANSWER 51 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:116627 HCAPLUS

DOCUMENT NUMBER: 128:146918

TITLE: Synthesis and properties of novel derivatives of 1,3,5-tris(diarylamino)benzenes for electroluminescent devices

AUTHOR(S): Thelakkat, Mukundan; Schmidt, Hans Werner

CORPORATE SOURCE: Bayreuther Institut Makromolekulforschung, Universitaet Bayreuth, Bayreuth, D-95540, Germany

SOURCE: Advanced Materials (Weinheim, Germany) (1998), 10(3), 219-223

CODEN: ADVMEW; ISSN: 0935-9648

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In the frame of developing hole-transport and emitter materials having low ionization potentials and high Tgs the synthesis of



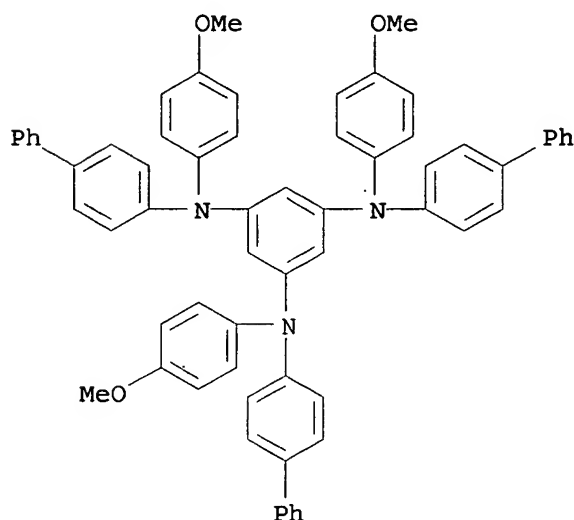
derivs. of 1,3,5-tris(diarylamino)benzenes with different aryl substituents like biphenyl, naphthyl, and anthracyl groups is described. The absorption, fluorescence, electrochem. behavior, and thermal properties of these materials were investigated. Some of these compds. exhibit no recrystn. at all upon cooling from their melts or on heating  $\geq T_g$ s and form amorphous films by vapor deposition. Some possess emitting properties in the blue and green region, resp. in single-layer LEDs.

IT 184895-05-4P

(preparation, UV/VIS absorption and fluorescence spectra, redox potentials, HOMO energies, DSC data, and LED characteristics of)

RN 184895-05-4 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris([1,1'-biphenyl]-4-yl)-N,N',N''-tris(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 76

IT Fluorescence

HOMO (molecular orbital)

Luminescence, electroluminescence

Redox potential

UV and visible spectra

(of tris(diarylamino)benzenes used for LEDs)

IT 184895-05-4P 189178-04-9P 189178-05-0P

(preparation, UV/VIS absorption and fluorescence spectra, redox potentials, HOMO energies, DSC data, and LED characteristics of)

L25 ANSWER 52 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

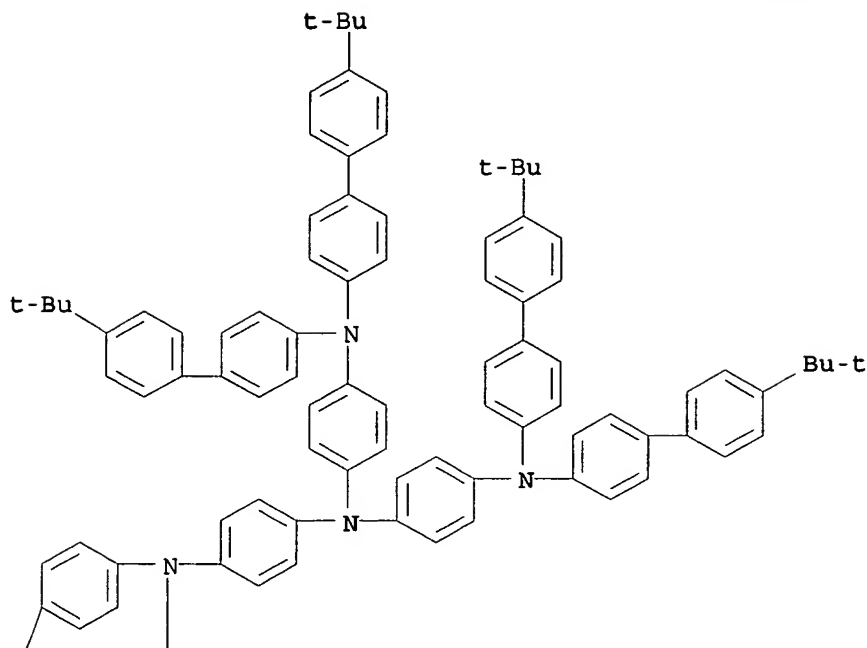
ACCESSION NUMBER: 1998:96487 HCAPLUS

DOCUMENT NUMBER: 128:223167

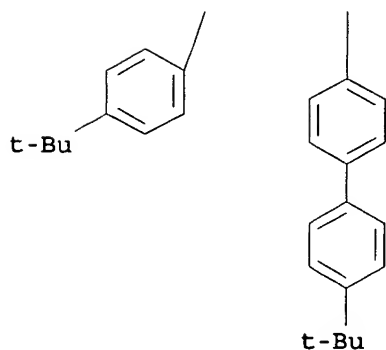
TITLE: Exciplex formation at the organic solid-state interface: Yellow emission in organic light-emitting diodes using green-fluorescent tris(8-quinolinolato)aluminum and hole-transporting molecular materials with low

ionization potentials  
AUTHOR(S): Itano, Koji; Ogawa, Hiromitsu; Shirota,  
Yasuhiko  
CORPORATE SOURCE: Faculty of Engineering, Department of Applied  
Chemistry, Osaka University, Yamadaoka, Suita,  
Osaka, 565, Japan  
SOURCE: Applied Physics Letters (1998), 72(6), 636-638  
CODEN: APPLAB; ISSN: 0003-6951  
PUBLISHER: American Institute of Physics  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB The bilayer organic light-emitting diodes using green-fluorescent  
tris(8-quinolinolato)aluminum (Alq3) as an emitting material and  
hole-transport materials with low ionization potentials,  
1,3,5-tris(3-methylphenylphenylamino)triphenylamine and  
4,4',4''-tris[bis(4-tert-buthylbiphenyl4-yl)amino]triphenylamine,  
emitted bright yellow light instead of green light. The yellow  
emission is attributed to exciplex formation at the solid  
interface between Alq3 and the hole-transport material. The  
exciplex formation was evidenced by the measurement of the  
photoluminescence spectra and lifetimes of the mixture of an  
equimolar amount of Alq3 and each of the hole-transport materials.  
The emission color can be tuned by varying the applied voltage.  
IT 199674-26-5  
(exciplex formation at organic solid-state interface: yellow  
emission in organic light-emitting  
diodes using green-fluorescent tris(8-quinolinolato)aluminum  
and hole-transporting mol. materials with low ionization  
potentials)  
RN 199674-26-5 HCAPLUS  
CN 1,4-Benzenediamine, N,N-bis[4-[bis(4'-(1,1-dimethylethyl)[1,1'-  
biphenyl]-4-yl)amino]phenyl]-N',N'-bis[4'-(1,1-dimethylethyl)[1,1'-  
biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 124729-98-2  
199674-26-5

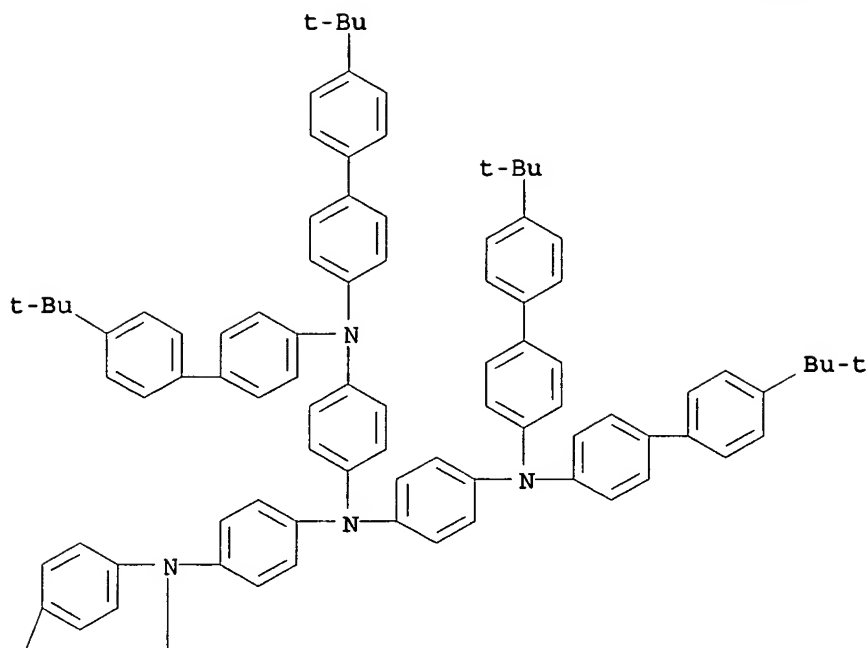
(exciplex formation at organic solid-state interface: yellow emission in organic light-emitting diodes using green-fluorescent tris(8-quinolinolato)aluminum and hole-transporting mol. materials with low ionization potentials)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

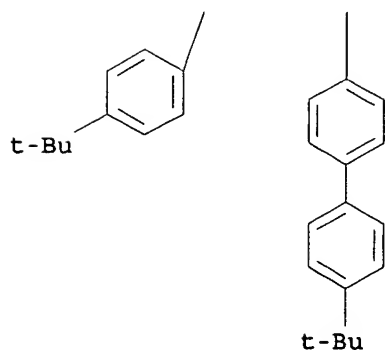
L25 ANSWER 53 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:90685 HCAPLUS  
DOCUMENT NUMBER: 128:186304  
TITLE: Organic light-emitting diodes using novel  
charge-transport materials  
AUTHOR(S): Shirota, Yasuhiko  
CORPORATE SOURCE: Department Applied Chemistry, Faculty  
Engineering, Osaka University, Suita, Osaka,  
565, Japan  
SOURCE: Proceedings of SPIE-The International Society  
for Optical Engineering (1997), 3148 (Organic  
Light-Emitting Materials and Devices), 186-193  
CODEN: PSISDG; ISSN: 0277-786X  
PUBLISHER: SPIE-The International Society for Optical  
Engineering  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Several novel families of amorphous mol. materials with high  
glass-transition temps. (TG) that function as charge-transport or  
emitting materials for organic LEDs were designed and synthesized.  
Double-layer and multilayer devices using these novel amorphous  
mol. materials were fabricated and their performances studied.  
The use of the novel amorphous mol. materials with high Tgs  
enabled the fabrication of thermally stable organic LEDs; one of the  
devices was found to operate even at 170°. The multilayer  
device consisting of double hole-transport layers and an emitting  
layer was found to enhance significantly the durability of the  
device. Exciplex formation at the organic/organic solid interface in  
organic LEDs also was studied.  
IT 199674-26-5  
(organic light-emitting diodes using novel  
charge-transport materials)  
RN 199674-26-5 HCAPLUS  
CN 1,4-Benzenediamine, N,N-bis[4-[bis[4'-(1,1-dimethylethyl)[1,1'-  
biphenyl]-4-yl]amino]phenyl]-N',N'-bis[4'-(1,1-dimethylethyl)[1,1'-  
biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 37271-44-6

124729-98-2 139092-78-7 145693-79-4 148044-16-0

153521-90-5 161581-07-3 185690-39-5 185690-41-9

199674-26-5

(organic light-emitting diodes using novel charge-transport materials)

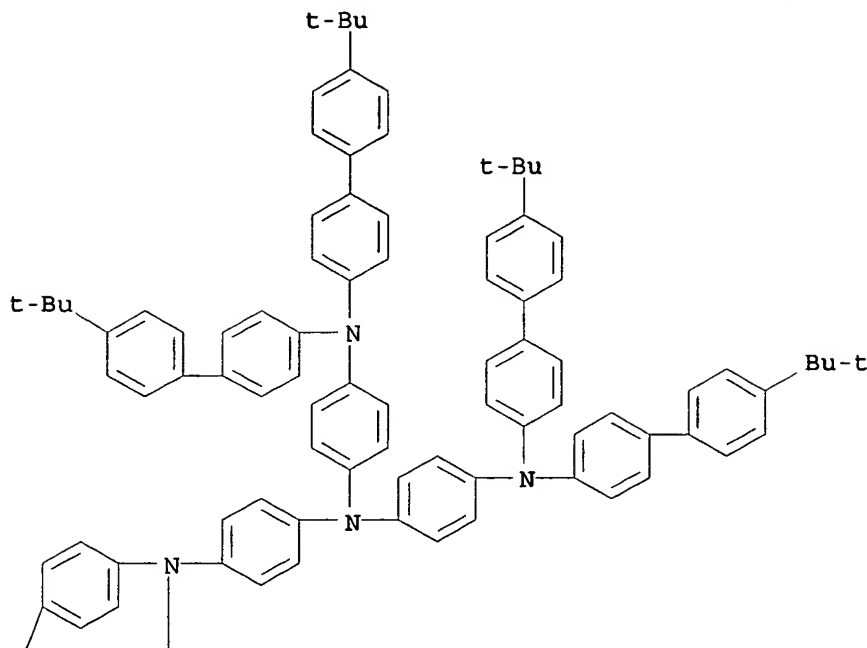
REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 54 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

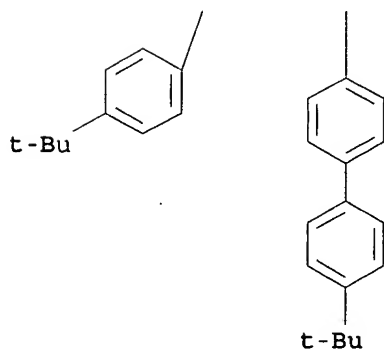
ACCESSION NUMBER: 1997:760093 HCAPLUS

DOCUMENT NUMBER: 128:41003  
TITLE: Thermally stable organic electroluminescent device using novel amorphous molecular charge-transport materials, 4,4',4''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine and 4,4',4''-tri(N-carbazolyl)triphenylamine  
AUTHOR(S): Ogawa, Hiromitsu; Inada, Hiroshi; Shirota, Yasuhiko  
CORPORATE SOURCE: Dep. Applied Chem., Fac. Eng., Osaka Univ., Suita, 565, Japan  
SOURCE: Macromolecular Symposia (1997), Volume Date 1998, 125(Organic Light-Emitting Materials and Devices), 171-180  
CODEN: MSYMEC; ISSN: 1022-1360  
PUBLISHER: Huethig & Wepf Verlag  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB For the purpose of developing an amorphous mol. material with a high glass transition temperature (Tg) and a low ionization potential for use as a charge-transport layer in organic electroluminescent (EL) devices, a novel starburst mol., 4,4',4''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine (t-Bu-TBATA), was designed and synthesized. T-Bu-TBATA was found to form readily a stable glass with a Tg of 203°. A multilayer EL device consisting of double hole transport layers of t-Bu-TBATA and 4,4',4''-tri(N-carbazolyl)triphenylamine and an emitting layer of tris(8-quinolinolato) Al was fabricated and its performances were examined. The device was found to exhibit good performances and to be thermally stable, operating even at 170°.  
IT 199674-26-5P (preparation, glass transition temperature, and performance in electroluminescent device as charge transport layer of)  
RN 199674-26-5 HCAPLUS  
CN 1,4-Benzenediamine, N,N-bis[4-[bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]amino]phenyl]-N',N'-bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 76  
 IT Luminescence, electroluminescence  
 (performance of triphenylamine-based devices)  
 IT 199674-26-5P  
 (preparation, glass transition temperature, and performance in electroluminescent device as charge transport layer of)

L25 ANSWER 55 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1997:760091 HCAPLUS  
 DOCUMENT NUMBER: 128:94870  
 TITLE: Synthesis and properties of novel hole transport materials for electroluminescent

devices

AUTHOR(S): Thelakkat, Mukundan; Fink, Ralf; Haubner, Frank; Schmidt, Hans Werner

CORPORATE SOURCE: Bayreuther Inst. Makromolekulforschung, Univ. Bayreuth, Bayreuth, D-95440, Germany

SOURCE: Macromolecular Symposia (1997), Volume Date 1998, 125(Organic Light-Emitting Materials and Devices), 157-164

CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Huethig & Wepf Verlag

DOCUMENT TYPE: Journal

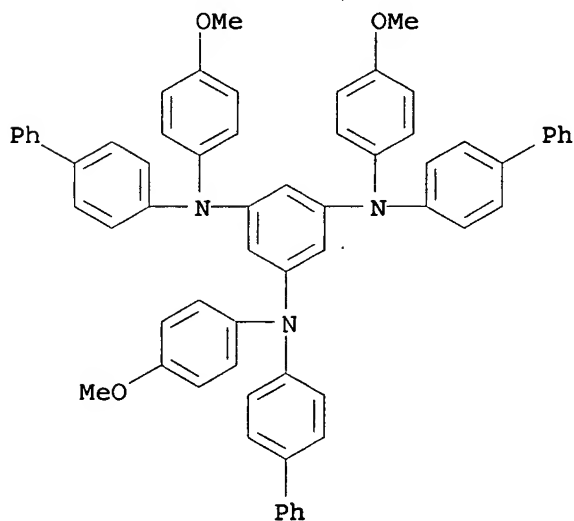
LANGUAGE: English

AB Low-mol.-weight triphenyldiamines (TPDs), novel 1,3,5-tris(diarylamino)benzenes (TDABs), polymeric triphenyldiamines, and insol. triphenylamine networks based on tris(4-ethynylphenyl)amine were prepared as hole transport materials for electroluminescent displays. The HOMO energies as determined from cyclic voltammetry for TPDs and TDABs are between -4.97 and -5.16 eV. By using a polymeric TPD as hole transport layer and tris(8-quinolinolato)aluminum as emitter, LEDs with an onset voltage of 3 V and a luminance  $\leq 900$  cd/m<sup>2</sup> were obtained under ambient conditions.

IT 184895-05-4P  
(preparation and properties of phenylamines and polymers thereof as hole transport materials for electroluminescent devices)

RN 184895-05-4 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris([1,1'-biphenyl]-4-yl)-N,N',N''-tris(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 37, 76

IT Luminescence, electroluminescence

Oxidation potential  
(of phenylamines and polymers thereof as hole transport materials for electroluminescent devices)

IT 15546-43-7P 20441-07-0P 107001-70-7P 122738-21-0P  
126738-30-5P 137832-75-8P 184895-04-3P 184895-05-4P



189178-04-9P 189178-05-0P 189178-08-3P 189178-09-4P  
 201026-13-3P 201026-14-4P 201026-17-7P

(preparation and properties of phenylamines and polymers thereof as  
 hole transport materials for electroluminescent devices)

L25 ANSWER 56 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:754328 HCAPLUS

DOCUMENT NUMBER: 128:28464

TITLE: High-molecular-weight starburst-type aromatic  
 amine compound and hole-transporting material  
 using it

INVENTOR(S): Kido, Junji; Fukuoka, Tadahiko; Takeda,  
 Takashi

PATENT ASSIGNEE(S): Chemipro Kasei K. K., Japan; Chemipro Kasei  
 Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 09301934	A2	19971125	JP 1996-140960	1996 0510
JP 3650218	B2	20050518	JP 1996-140960	1996 0510
PRIORITY APPLN. INFO.:				

OTHER SOURCE(S): MARPAT 128:28464  
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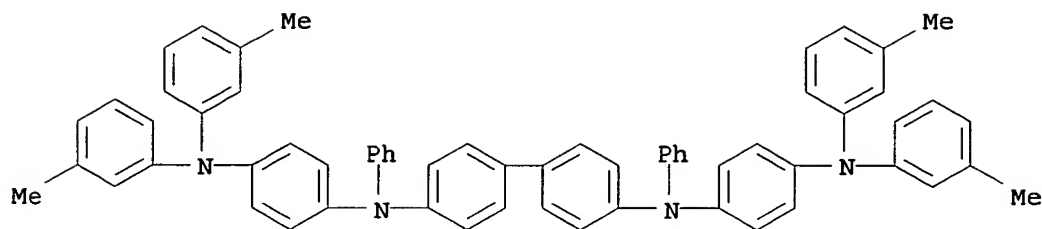
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
 \*

AB The amine compound comprises I or II [Q1 = (lower alkyl- or lower  
 alkoxy-substituted) aryl; Q; Q2-5 = (lower alkyl- or lower  
 alkoxy-substituted) aryl; R1-18 = H, lower alkyl, lower alkoxy].  
 The hole-transporting material comprises the amine compound. An  
 electroluminescent device using the amine compound showed high and  
 stable luminance.

IT 199121-98-7P 199122-00-4P  
 (high-mol.-weight starburst-type aromatic amine compound for  
 hole-transporting material)

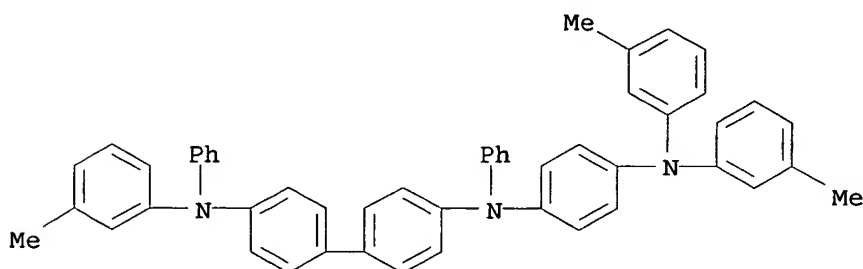
RN 199121-98-7 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-bis[4-[bis(3-  
 methylphenyl)amino]phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 199122-00-4 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N-[4-[bis(3-methylphenyl)amino]phenyl]-N'-(3-methylphenyl)-N,N'-diphenyl-(9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C217-92; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25

IT 199121-98-7P 199122-00-4P

(high-mol.-weight starburst-type aromatic amine compound for hole-transporting material)

L25 ANSWER 57 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:618270 HCAPLUS

DOCUMENT NUMBER: 127:263592

TITLE: Crosslinkable or chain extendable polyarylpolyamines and films for electroluminescent devices

INVENTOR(S): Woo, Edmund P.; Inbasekaran, Michael; Shiang, William R.; Roof, Gordon R.; Wu, Weishi

PATENT ASSIGNEE(S): Dow Chemical Co., USA

SOURCE: PCT Int. Appl., 57 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 9733193	A2	19970912	WO 1997-US2643	1997 0220

WO 9733193                      A3              20020926

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU,  
 CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG,  
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW,  
 MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM,  
 TR, TT, UA, UG, UZ, VN, YU

RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR,  
 GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,  
 CM, GA, GN, ML, MR, NE, SN, TD, TG

AU 9722776                      A1              19970922              AU 1997-22776

US 5929194                      A              19990727              US 1997-967348

PRIORITY APPLN. INFO.:                      US 1996-606180              A

US 1996-696280                      A

WO 1997-US2643                      W

1997  
0220  
1997  
1027  
1996  
0223  
1996  
0813  
1997  
0220

## OTHER SOURCE(S):                      MARPAT 127:263592

AB The polyarylpolyamines are prepared by the reaction of  $\geq 1$  tertiary di- or polyarylamine having 2 halogen substituents with a haloarom. compound having a crosslinkable reactive group or trialkylsiloxy moiety. Films of the title compds., as well as films of polymers of their crosslinkable species, are efficient in the transport of pos. charges when exposed to relatively low voltage levels, and demonstrate solvent and heat resistance.

IT 195730-45-1P  
 (film; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

RN 195730-45-1 HCAPLUS

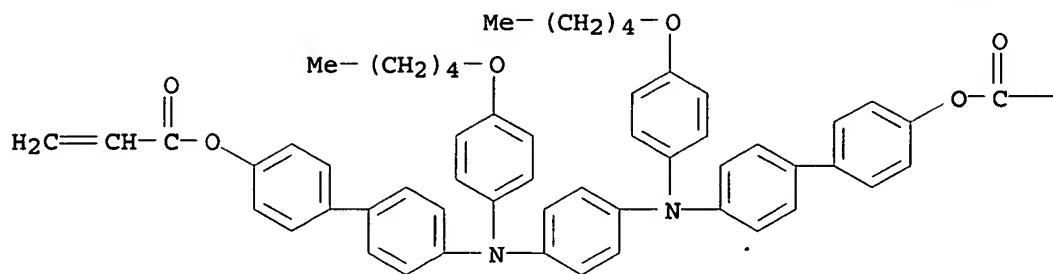
CN 2-Propenoic acid, 2-ethyl-2-[[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with 1,4-phenylenebis[[[4-(pentyloxy)phenyl]imino][1,1'-biphenyl]-4',4-diyl] di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

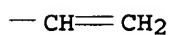
CRN 195730-44-0

CMF C58 H56 N2 O6

PAGE 1-A



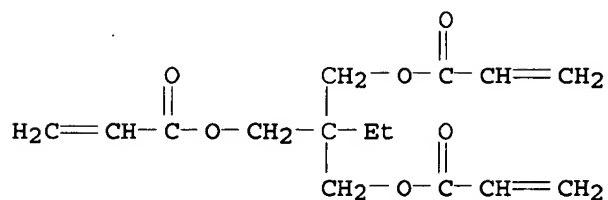
PAGE 1-B



CM 2

CRN 15625-89-5

CMF C15 H20 O6



IT 195730-44-0P

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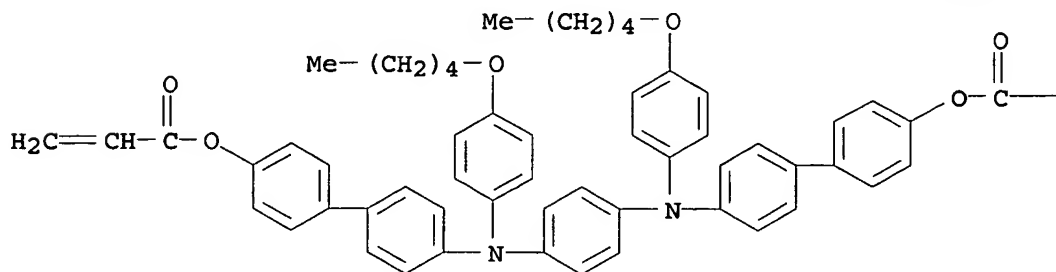


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RN 195730-44-0 HCAPLUS

CN 2-Propenoic acid, 1,4-phenylenebis[[[(4-pentyloxy)phenyl]imino][1,1'-biphenyl]-4',4-diyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



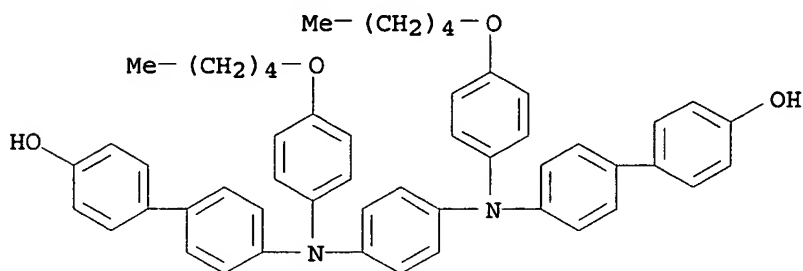
PAGE 1-B

—CH=CH<sub>2</sub>

IT 195730-43-9P  
 (reaction with acryloyl chloride; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

RN 195730-43-9 HCAPLUS

CN [1,1'-Biphenyl]-4-ol, 4',4'''-[1,4-phenylenebis[[4-(pentyloxy)phenyl]imino]]bis- (9CI) (CA INDEX NAME)



IC ICM G03C

CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 35, 72

ST polyarylamine manuf crosslinking film layer; light emitting diode film layer; electroluminescent device charge transport layer; hole transporting polymer film

IT Luminescence  
 (crosslinkable or chain extendable polyarylpolyamines with)

IT 195730-33-7P 195730-37-1P 195730-38-2P 195730-45-1P  
 195730-51-9P 195730-55-3P 195891-85-1P  
 (film; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

IT 195730-32-6P 195730-36-0P 195730-44-0P 195730-49-5P  
 195730-53-1P 195730-64-4P  
 (preparation and polymerization; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

IT 195730-35-9P 195730-43-9P 195730-62-2P  
 (reaction with acryloyl chloride; crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

L25 ANSWER 58 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:224297 HCAPLUS

DOCUMENT NUMBER: 126:299494

TITLE: New hole transport material for organic light emitting devices

AUTHOR(S): Thelakkat, Mukundan; Bacher, Andreas; Fink, Ralf; Haubner, Frank; Schmidt, Hans-Werner

CORPORATE SOURCE: Makromolekulare Chemie I, Universitaet

SOURCE: Bayreuth, Bayreuth, 95440, Germany  
 Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (1997), 38(1),  
 396-397  
 CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry

DOCUMENT TYPE: Journal

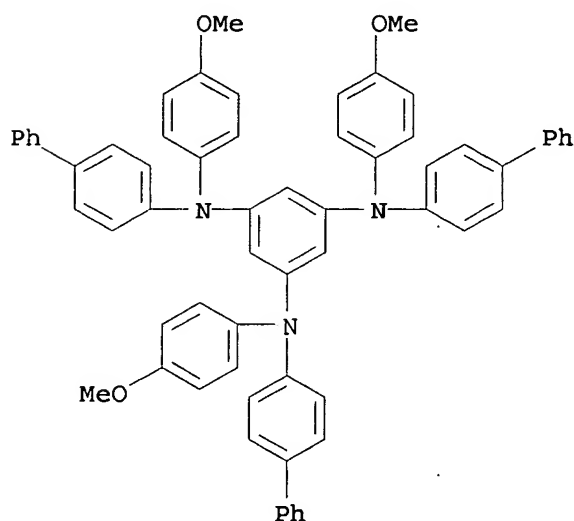
LANGUAGE: English

AB The triphenylamine derivs. having high polarization potentials and  
 high Ts were synthesized. The materials can be used as hole  
 transport materials and as emitters in electroluminescent devices.  
 The synthesis, spectral properties and their applications in LEDs  
 are described.

IT 184895-05-4P  
 (synthesis and properties and application of new hole transport  
 material for organic light emitting devices)

RN 184895-05-4 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris([1,1'-biphenyl]-4-yl)-  
 N,N',N''-tris(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 76

ST hole transport material org LED; light emitting  
 device triphenylamine deriv

IT Electroluminescent devices  
 (synthesis and properties and application of new hole transport  
 material for organic light emitting devices)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolino) 7429-90-5,  
 Aluminum, uses 50926-11-9, Indium tin oxide  
 (synthesis and properties and application of new hole transport  
 material for organic light emitting devices)

IT 15546-43-7P 20441-07-0P 107001-70-7P 122738-21-0P  
 126738-30-5P 137832-75-8P 184895-04-3P 184895-05-4P  
 189178-04-9P 189178-05-0P 189178-07-2P 189178-08-3P  
 189178-09-4P  
 (synthesis and properties and application of new hole transport

material for organic light emitting devices)  
IT 104-94-9 108-73-6, 1,3,5-Benzenetriol 122-39-4D, derivs  
531-91-9 3001-15-8 4316-58-9  
(synthesis and properties and application of new hole transport  
material for organic light emitting devices)

L25 ANSWER 59 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:691216 HCAPLUS

DOCUMENT NUMBER: 126:52354

TITLE: Cyclic voltammetry and time of flight studies  
of new organic hole transporting and electron  
transporting materials - structure device  
properties in light emitting  
diodes

AUTHOR(S): Bacher, A.; Fink, R.; Poesch, P.; Schmidt, H.  
-W.; Thelakkat, M.; Bleyl, I.; Haarer, D.

CORPORATE SOURCE: Makromolekulare Chemie I, Bayreuther Institut  
fur Makromolekulforschung (BIMF), Bayreuth,  
95440, Germany

SOURCE: Inorganic and Organic Electroluminescence,  
[International Workshop on  
Electroluminescence], 8th, Berlin, Aug. 13-15,  
1996 (1996), 109-112. Editor(s): Mauch,  
Reiner H.; Gumlich, Hans-Eckhart.  
Wissenschaft und Technik: Berlin, Germany.  
CODEN: 63OXAW

DOCUMENT TYPE: Conference

LANGUAGE: English

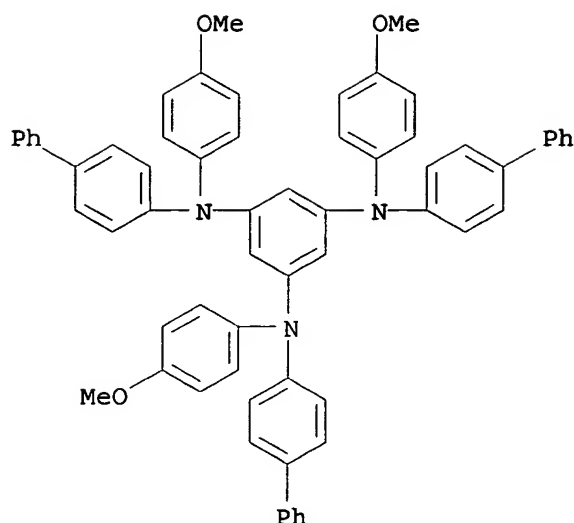
AB Low mol. weight triphenyldiamine derivs. (TPDs) and  
1,3,5-tris(diarylamino)benzenes (TDABs) as materials for hole  
transporting layers (HTL) were prepared via Ullmann reaction. To  
optimize and estimate the hole transporting and hole injection  
properties of these HTLs, time of flight (TOF) and cyclic  
voltammetry (CV) measurements were carried out. Low values of the  
HOMO energy levels (5.0 to 5.2 eV) were reached through electron  
donating substitution. These HTLs show a hole transport mobility  
of 10<sup>-3</sup> cm<sup>2</sup>/Vs. Multilayer light emitting  
devices (LEDs) with the different TPDs or TDABs as HTLs and Alq<sub>3</sub>  
as a standard electron transporting and emitting material were  
fabricated. Under ambient conditions, brightness up to 550 Cd/m<sup>2</sup>  
and an external efficiency of 0.2% was obtained in the device  
ITO/TPD 3/Alq<sub>3</sub>/Al. For a well balanced charge injection of holes  
and electrons, the authors synthesized various II-electron  
deficient aromatic heterocycles like triazoles and triazines to be  
used as electron transporting/hole blocking layers (ETL). These  
materials possess LUMO energy levels of 2.6 eV and 2.8 eV resp.  
In agreement with these CV data, a 3-fold increase in brightness  
was achieved in a three-layer LED with a triazine derivative as ETL.

IT 184895-05-4P

(hole transporting materials for organic light  
emitting diode)

RN 184895-05-4 HCAPLUS

CN 1,3,5-Benzenetriamine, N,N',N''-tris([1,1'-biphenyl]-4-yl)-  
N,N',N''-tris(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 72, 74, 76
- ST cyclic voltammetry hole transport material LED; light emitting diode org hole transport; hole transport layer triphenyldiamine LED; transport hole diarylamino benzene prepn; electron transport layer triazole triazine
- IT Reduction, electrochemical  
 (cyclic voltammetry of electron transporting materials for organic light emitting diode)
- IT Oxidation, electrochemical  
 (cyclic voltammetry of hole transporting materials for organic light emitting diode)
- IT Cyclic voltammetry  
 (cyclic voltammetry of new organic hole transporting materials for light emitting diodes)
- IT Electric transport properties  
 Electroluminescent devices  
 (electron and hole transporting materials for organic light emitting diode)
- IT Hole mobility  
 (hole transporting materials for organic light emitting diode)
- IT Electric current carriers  
 (mobility; electron and hole transporting materials for organic light emitting diode)
- IT HOMO (molecular orbital)  
 (of electron and hole transporting materials for organic light emitting diode)
- IT LUMO (molecular orbital)  
 (of electron transporting materials for organic light emitting diode)
- IT Band structure  
 (of light emitting diode with novel of electron and hole transporting layers)
- IT 3109-63-5, Tetrabutylammonium hexafluorophosphate  
 (cyclic voltammetry of electron and hole transporting materials for organic light emitting diode using)



IT 7429-90-5, Aluminum, uses 50926-11-9, ITO  
(electrode for light emitting diode with  
novel of electron and hole transporting layers)

IT 184895-07-6  
(electron transporting materials for organic light  
emitting diode)

IT 184895-06-5  
(electron transporting materials for organic light  
emitting diode)

IT 15546-43-7P 20441-07-0P 122738-21-0P  
(hole transporting materials for organic light  
emitting diode)

IT 126738-30-5P 184895-04-3P 184895-05-4P  
(hole transporting materials for organic light  
emitting diode)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 65181-78-4, TPD  
(light emitting diode with novel of  
electron and hole transporting layers)

L25 ANSWER 60 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:769803 HCAPLUS

DOCUMENT NUMBER: 123:183664

TITLE: Amine compound and electro-  
luminescence device comprising same.

INVENTOR(S): Tomiyama, Hiromitsu; Oshino, Masahiko;  
Nakanishi, Naoko; Suzuki, Mutsumi; Fukuyama,  
Masao; Murakami, Mutsuaki; Nambu, Taro

PATENT ASSIGNEE(S): Hodogaya Chemical Co., Ltd., Japan; Matsushita  
Electric Industrial Co., Ltd.

SOURCE: Eur. Pat. Appl., 98 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

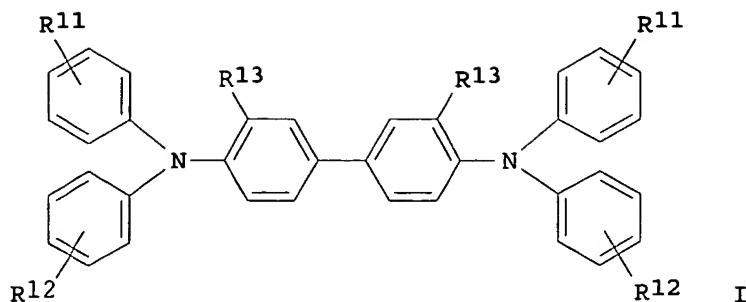
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
EP 650955	A1	19950503	EP 1994-117206	1994 1031
EP 650955 R: DE, FR, GB	B1	19980819		
JP 07126615	A2	19950516	JP 1993-273883	1993 1101
JP 3194657	B2	20010730		
JP 07126225	A2	19950516	JP 1993-293800	1993 1101
JP 3574860	B2	20041006		
JP 07126226	A2	19950516	JP 1993-293801	1993 1101
JP 3220950	B2	20011022		
JP 2001273978	A2	20011005	JP 2001-49489	1993 1101
JP 3529735	B2	20040524		

JP 07331238	A2	19951219	JP 1994-132744	1994 0615
JP 08003122	A2	19960109	JP 1994-155470	1994 0615
JP 08100172	A2	19960416	JP 1994-236622	1994 0930
JP 3274939	B2	20020415		
JP 2001181240	A2	20010703	JP 2000-332663	2000 1031
JP 3567323	B2	20040922		
JP 2002343577	A2	20021129	JP 2002-83871	2002 0325
JP 3745296	B2	20060215		
JP 2004182740	A2	20040702	JP 2004-21884	2004 0129
PRIORITY APPLN. INFO.:			JP 1993-273883	A 1993 1101
			JP 1993-293800	A 1993 1101
			JP 1993-293801	A 1993 1101
			JP 1994-132744	A 1994 0615
			JP 1994-155470	A 1994 0615
			JP 1994-236622	A 1994 0930
			JP 2001-49489	A3 1993 1101

OTHER SOURCE(S) :  
GI

MARPAT 123:183664



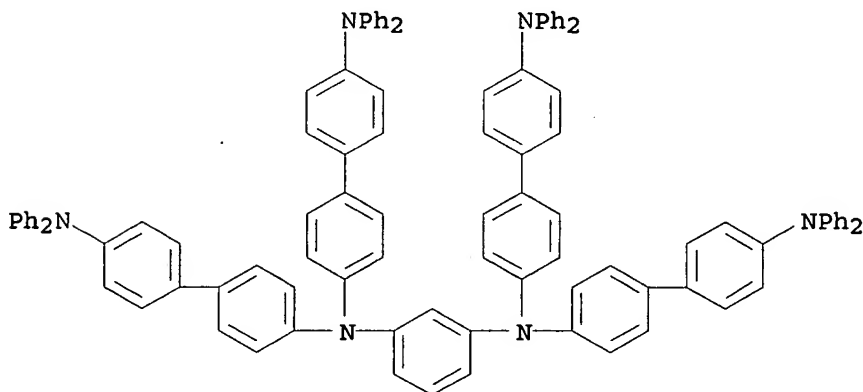
AB Novel amine compds. useful as electron-transporting materials to be incorporated in **organic electro-luminescence (EL)** devices are described, e.g., having the formula I [R1, R2 = H, alkyl, alkoxy, Ph, alkylphenyl, alkoxyphenyl, with the proviso that  $\geq 1$  of R1 and R2 is n-Bu, i-Bu, sec-Bu, tert-Bu, Ph, alkoxyphenyl, alkylphenyl; R3 = H, alkyl, alkoxy, Cl]. Five more Markush structures are given. The organic EL device can find wide application in various display units, requires a low applied voltage and exhibits a high luminance and an excellent stability.

IT 167218-51-1P

(amine compound as electron-transporting material for electroluminescent devices)

RN 167218-51-1 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-1,3-phenylenebis[N-(4'-(diphenylamino) [1,1'-biphenyl]-4-yl)-N',N'-diphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C211-55; C07C211-56; C07C217-92; C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 25

IT 79183-76-9P 128396-99-6P 167218-41-9P 167218-42-0P  
 167218-43-1P 167218-44-2P 167218-45-3P 167218-46-4P  
 167218-47-5P 167218-48-6P 167218-49-7P 167218-50-0P  
 167218-51-1P 167218-52-2P 167218-53-3P

(amine compound as electron-transporting material for

electroluminescent devices)

L25 ANSWER 61 OF 61 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:665091 HCAPLUS

DOCUMENT NUMBER: 123:55474

TITLE: Preparation of arylenediamine derivatives as  
hole transporting material and organic  
electroluminescent element containing themINVENTOR(S): Kawamura, Hisayuki; Hosokawa, Chishio;  
Kusumoto, Tadashi; Nakamura, Hiroaki

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 77 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 9509147	A1	19950406	WO 1994-JP1585	1994 0928
W: JP, US RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 721935	A1	19960717	EP 1994-927780	1994 0928
EP 721935	B1	20030122		
R: BE, CH, DE, FR, GB, IT, LI, NL, SE				
EP 1162193	A1	20011212	EP 2001-122723	1994 0928
EP 1162193	B1	20030514		
R: BE, CH, DE, FR, GB, IT, LI, NL, SE				
JP 2002151273	A2	20020524	JP 2001-326541	1994 0928
JP 3295088	B2	20020624	JP 1995-510209	1994 0928
US 5837166	A	19981117	US 1996-615281	1996 0327
JP 2002020354	A2	20020123	JP 2001-150302	2001 0521
JP 3643789	B2	20050427		
JP 2004288640	A2	20041014	JP 2004-138858	2004 0507
JP 2005008644	A2	20050113	JP 2004-279111	2004 0927
JP 2005139193	A2	20050602	JP 2004-358355	2004 1210
JP 2005213262	A2	20050811	JP 2005-42057	

				2005 0218
JP 2005314428	A2	20051110	JP 2005-148942	2005 0523
JP 2006128716	A2	20060518	JP 2006-12114	2006 0120
PRIORITY APPLN. INFO.:			JP 1993-243024	A 1993 0929
			EP 1994-927780	A3 1994 0928
			JP 1995-510209	A3 1994 0928
			JP 2001-150302	A3 1994 0928
			JP 2001-326541	A3 1994 0928
			WO 1994-JP1585	W 1994 0928
			JP 2004-138858	A3 2004 0507
			JP 2004-279111	A3 2004 0927
			JP 2005-42057	A3 2005 0218

OTHER SOURCE(S):            MARPAT 123:55474  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

AB    The title compds., e.g. p-phenylenediamine derivs. (I; Ar1, Ar2, Ar3, Ar4 = C6-20 aryl; wherein the benzene ring and Ar1 - Ar4 are optionally substituted by C1-6 alkyl or alkoxy or Ph and a total of  $\geq 6$  benzene rings must be present, including the central benzene ring and those from Ar1 - Ar4 groups), which can remarkably improve the luminescence life when used as a component of an organic electroluminescent element (EL),

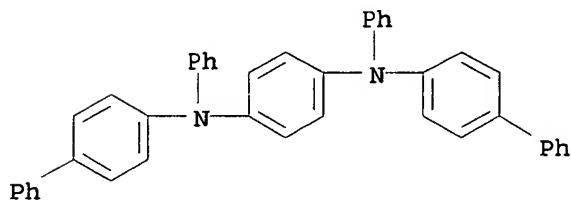
are prepared More specifically, the title compds. include p-phenylenediamine derivs. having 4 biphenyl groups (II; R1 - R9 = H, C1-6 alkyl or alkoxy or Ph; or R1 and R2, R2 and R4, R3 and R4, R5 and R6, R6 and R8, R7 and R8, R2 and R9, R4 and R9, R6 and R9, and R8 and R9 are optionally bonded to each other to form rings) and 4,4'-biphenylenediamine derivs. having 5 biphenyl groups (III; R10 - R17 = H, C1-6 alkyl or alkoxy or Ph; R10 and R11, R11 and R13, R12 and R13, R14 and R15, R15 and R17, and R16 and R17 are optionally bonded together to form rings.). An organic EL element with improved luminescence life as compared with the conventional ones contains at least a p-phenylenediamine derivative I having at least six benzene rings or a 4,4'-biphenylenediamine III derivative having five biphenyl groups as a material for a hole-transport layer. Thus, 1,4-phenylenediamine 1.00, 4-iododiphenyl 11.0, K2CO3 12.2, and Cu powder 1 g were suspended in DMSO and reacted at 180° for 5 h to give, after workup and silica gel chromatog., 1.4 g II (R1 - R9 = H) (IV). An EL element was manufactured by successively vapor-depositing tris(3-methylphenylphenylamino)triphenylamine 20, IV 40, tris(8-quinolinol)aluminum 20 nm thickness, and Ag and Mg (cathode layer) on a ITO-deposited glass plate and showed the luminescence life of 350 h vs. 70 h for a reference material N,N'-diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine.

IT 164724-31-6P 164724-33-8P 164724-34-9P

(preparation of arylenediamine derivs. as hole transporting material and organic electroluminescent element containing them)

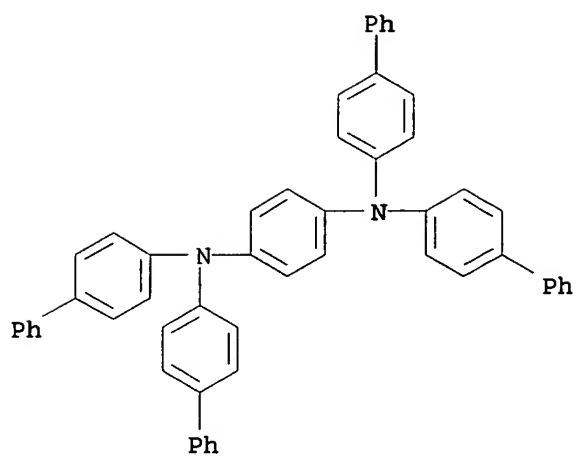
RN 164724-31-6 HCAPLUS

CN 1,4-Benzenediamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



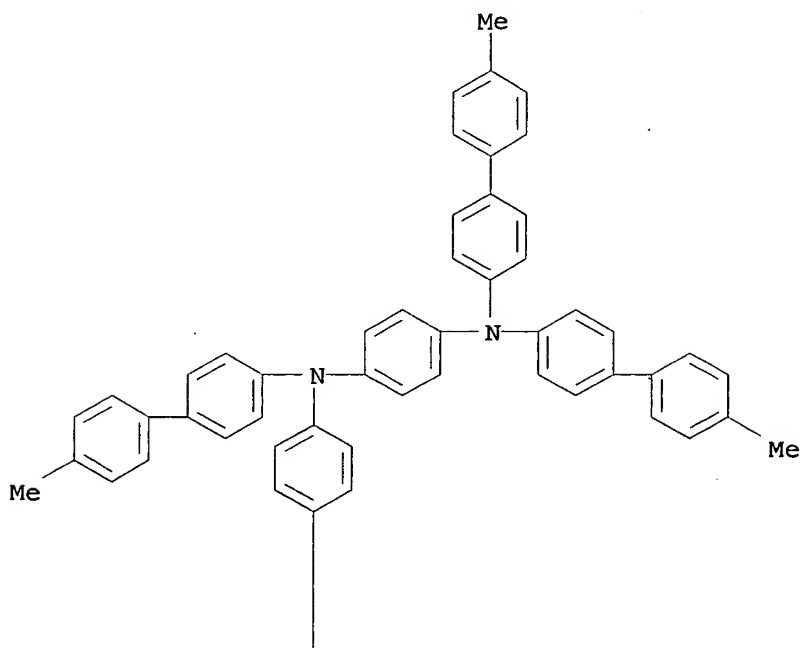
RN 164724-33-8 HCAPLUS

CN 1,4-Benzenediamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)-  
(9CI) (CA INDEX NAME)

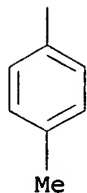


RN 164724-34-9 HCAPLUS  
CN 1,4-Benzenediamine, N,N,N',N'-tetrakis(4'-methyl[1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07C211-54  
ICS C07C211-61; C07C217-92; C02D225-08; C09K011-06; H05B033-14  
CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 76  
ST arylenediamine prepn hole transporting material; org  
electroluminescent element; luminescence life  
improvement  
IT 139994-47-1P 164724-31-6P 164724-32-7P  
164724-33-8P 164724-34-9P 164724-35-0P  
164724-36-1P  
(preparation of arylenediamine derivs. as hole transporting material  
and organic electroluminescent element containing them)